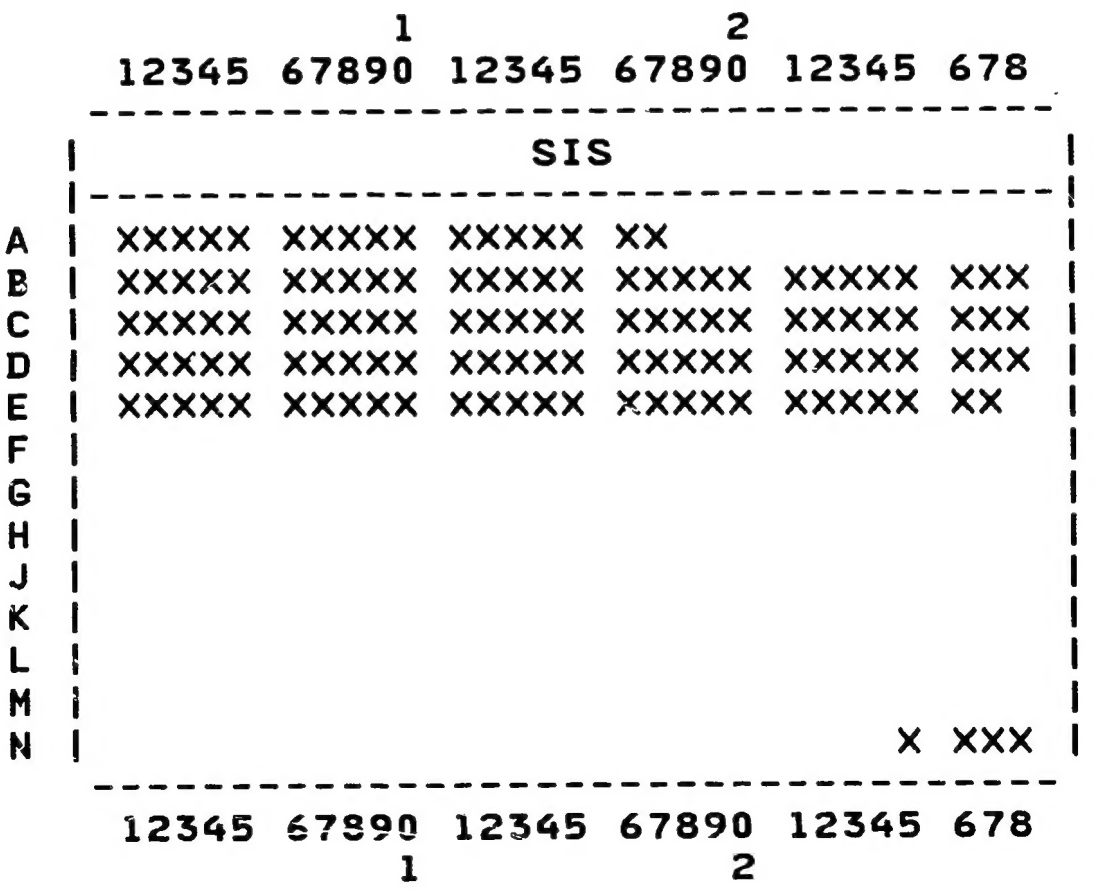
STRUCTURE OF MICROCARD

Continue: I02/1 Fig.: I01/2



Continue: I02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: I02/2

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F.. distributor-type fuel-injection pumps with Diesel anti-theft system (DDS1) for VW vehicles.

They are designed to supplement the test instructions for VE..F.. distributor-type fuel-injection pumps.

Continue: I03/1

SPECIAL FEATURES

On VE..F distributor-type fuel-injection pumps with DDS1 this system m u s t be diagnosed and released with KTS 300 and a special test program.

* The diagnosis encompasses:
  - Actuator test and
  - Reading fault memory.

To avoid additional work DDS1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: I03/2

SPECIAL FEATURES

* Release enables the fuel-injection pump to be tested without prior disassembly of the DDS1.

The start of release is followed by a 15 minute waiting period.
During this time the ELAB is clocked at a frequency of roughly 1 Hertz.
If this process is interrupted, for example due to a break in the signal line or voltage supply, release is to be restarted.

Continue: I04/1

SPECIAL FEATURES

The KTS 300 must be connected whilst testing the fuel-injection pump.

If the KTS 300 is not switched off on completion of pump testing, the release program remains available for 30 minutes, thus enabling other pumps to be tested without having to reload the release program.

Continue: I04/2

SPECIAL FEATURES

Loading RAM module

1. Load basic program
2. Select and load passenger vehicle and then components
3. KTS 300 switched off, loading station set to "End"

Program for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: I05/1

SPECIAL FEATURES

Loading of the enabling program for checking the fuel-injection pump involves implementing the following items (5...8):

4. Switch on KTS 300 again. Switch to "Self-test ..".
   Call up "1 = Components" and confirm.
   Following display then appears:
   "1 = DDS1", confirm.
   Confirm "3 = Test bench".
   Following prompt appears:
   "Enter workshop code on PC".

Continue: I05/2

SPECIAL FEATURES

5. Set to "Load further KTS 300" in menu and confirm.
   Set to "Mode" in loading program, select "Workshop code".

6. Enter workshop code and password.

7. If checking of data entered was OK, KTS 300 jumps to "Heed service information", main menu is displayed on loading station.
   This releases enabling program.

Continue: I06/1

SPECIAL FEATURES

DDS1 repair is not envisaged.

Work units will be established and issued separately.

Continue: I01/1

SAFETY PRECAUTIONS

1. DDS1 is o n l y to be powered via 12 volt battery or with 12 volt regulator.
   N e v e r use charger!
2. DDS1 diagnosis can only be performed with KTS 300 and a special test program. Program available on CD-ROM as of 95/7 issue.
3. When assembling DDS1 a l w a y s pay attention to appropriate information in these instructions.

Continue: I07/2

SAFETY PRECAUTIONS

4. When drilling break-off screws, injection-pump openings are to be protected to prevent ingress of chips.

Continue: I01/1

TESTERS AND TOOLS

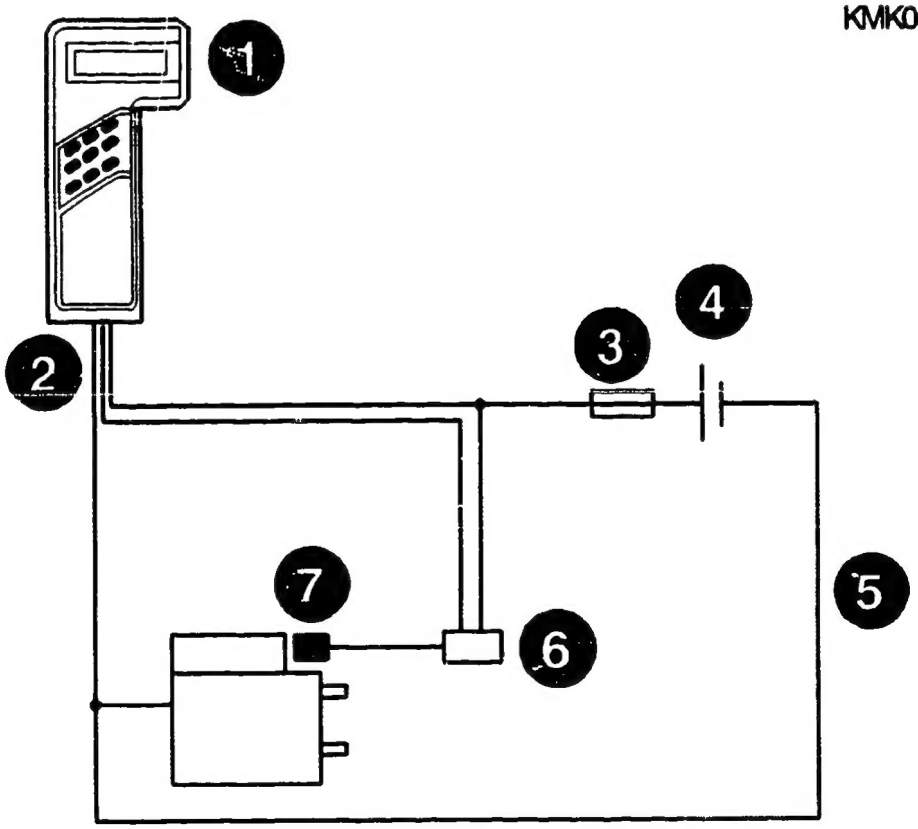
Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
12 V stabilizer	comm. avail.
Test-cable set	1 687 011 208
HSS drill	
diameter 3.2 mm	comm. avail.
Drilling bush, improvised	
(see "Drawing" Section)	
Screwdriver, size 3	comm. avail.
Contact extractor	comm. avail.
Hand-held drill	comm. avail.
Hand-held countersink,	
10.4 mm	comm. avail.

Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage stabilizer
(not charging unit)
5 = Ground lead
6 = System connector DDS1
(term. 1 = signal,
term. 2 = 12 V)
7 = DDS1

Continue: I01/1 Fig.: I09/2



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.
Connect up stabilizer.
Use adapters from test-cable set.
A l w a y s protect exposed sections of leads against ground contact (e.g. piece of sheathing).

Continue: I10/2

SELF-DIAGNOSIS

Preparation

Once communication has been established and provided that DDS1 and electric shut-off device (ELAB) are intact, clocking of ELAB commences.
Actuation frequency approx. 1 Hertz.
ELAB is OK if switching noise is audible.
The fault memory of the DDS1 must additionally be read to ensure that the DDS1 is OK.

If switching noise is not audible, continue on Coordinate: I15/2

Continue: I11/1

Read fault memory.

If there are no faults stored, continue on Coordinate: I15/2

Fault code: 1 I12/1

Fault code: 2 I12/2

Fault code: 4 I13/2

Fault code: 8 (code not used)

Continue: I11/2

Read fault memory.

Fault code: 10 I13/2

Fault code: 20 I14/1

Fault code: 40 I14/2

Fault code: 80 I15/1

Continue: I12/1

Fault code 1

Renew DDS1.

Continue: I12/2

Fault code 2

Renew DDS1.

Continue: I13/1

Fault code 4

Renew DDS1.

Continue: I13/2

Fault code 8

Interrupt voltage supply to DDS1.

Re-connect voltage supply.
Start diagnosis program.

Renew DDS1 if fault is still present.

Continue: I14/1

Fault code 20

Disconnect KTS 300.
Interrupt voltage supply to DDS1.

Connect DDS1 to immobilizer control unit.
Switch on ignition, deactivate DDS1.
Switch off ignition.
Re-connect voltage supply and KTS 300.
Start diagnosis program.

If fault is still present, renew DDS1.
If not, DDS1 is OK.

Continue: I14/2

Fault code 40

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I15/1

Fault code 80

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I01/1

Disassemble DDS1.

Test ELAB.

ELAB OK: Renew DDS1.
ELAB defective: Renew ELAB.

Continue: I16/1

DDS1 DISASSEMBLY

The DDS1 is attached with break-off screws to the electric shut-off device (ELAB).

I m p o r t a n t:
A l w a y s seal injection-pump openings with suitable plugs to prevent ingress of chips.

Continue: I16/2

DDS1 DISASSEMBLY

Drill break-off screws with 3.2 mm diameter HSS drill to a depth of roughly 5 mm. Use drill bush for guidance (see Drawings Section). Then screw out screws using screwdriver (size 3).

I m p o r t a n t:
Always drill both break-off screws.

Continue: I17/1

DDS1 DISASSEMBLY

Carefully pull off DDS1.
Remove protective cap from electrical connection of ELAB.
Screw hexagon nut off ELAB and pull off DDS1.

Continue: I01/1

DDS1 ASSEMBLY

I m p o r t a n t:
* A l w a y s use assembly kit when assembling DDS1.
* DDS1 m a y only be operated with ELAB cable fitted.
* N e v e r tug at ELAB cable or at DDS1 with ELAB cable screwed on.
* Threads in clip and at screws must be free from grease before use.
* Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I18/2

DDS1 ASSEMBLY

I m p o r t a n t:
* Apply small quantity of grease (2 281 007 600, contained in assembly kit) to clamping surfaces of DDS1. N e v e r grease threads of clip or screws.

Position clip behind ELAB.
Attach locating piece to ELAB. Insert ELAB cable in locating piece.
Attach cable with collar nut to ELAB.

Continue: I19/1

DDS1 ASSEMBLY

Tightening torque: 2 Nm.
Fit protective cap.
Insert break-off screws in housing bores.

I m p o r t a n t:
Before breaking off fastening screws (item 7 of tightening specification) a l w a y s pay attention to:
* DDS1 assembly and
* DDS1 adaption
sections in trouble-shooting instructions for appropriate vehicle.

Continue: I20/1

DDS1 ASSEMBLY

Tightening specification

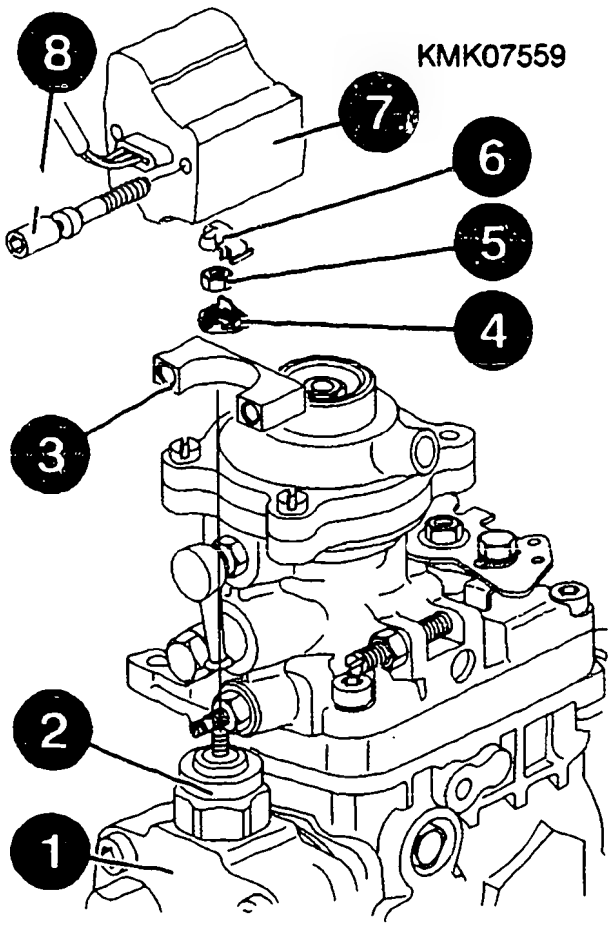
1. Screw in both screws 4 turns by hand
2. Position right screw by hand
3. Position left screw by hand and tighten with torque wrench to 1 Nm
4. Tighten right screw to 2 Nm
5. Tighten left screw to 3 Nm
6. Tighten right screw to 3 Nm
7. Break off left screw head and then right screw head

Continue: I01/1

DRAWINGS

1 = Injection pump
2 = Electric shut-off device (ELAB)
3 = Nut
4 = Clip
5 = Cap
6 = DDS1
7 = Break-off screws

Continue: I21/1 Fig.: I 0/2



DRAWINGS

Self-made drill bush

Material (recommendation):
Round steel CK 10, diameter 10 h7

Dimensions

* Length:	20 mm
* OD:	10 -0.1 mm
* ID: (for drill diameter 3.2)	3.5 mm

Continue: I01/1

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Continue: I23/1

EDITORIAL NOTE

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Please direct questions and comments
concerning the contents to our
authorized representative in your
country.

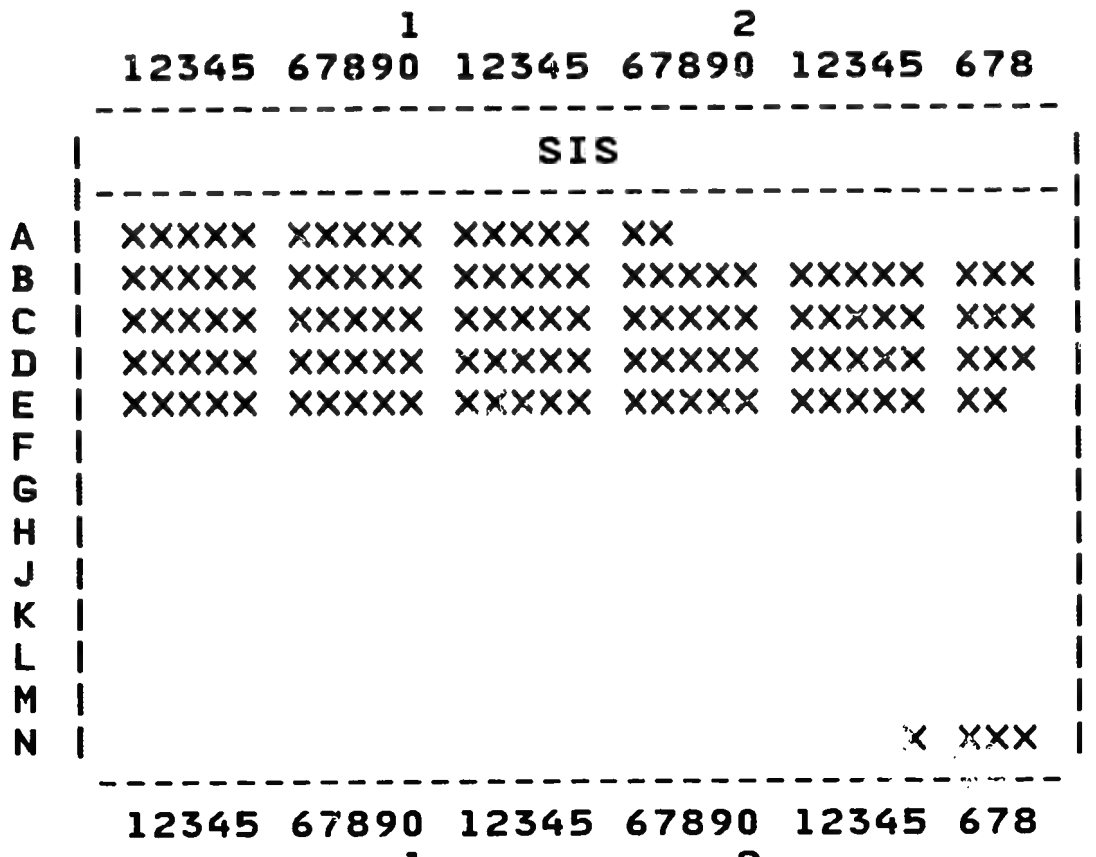
Continue: I23/2

EDITORIAL NOTE

Continue: I01/1

STRUCTURE OF MICROCARD

Continue: A02/1 Fig.: A01/2



Continue: A02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: A02/2

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F.. distributor-type fuel-injection pumps with Diesel anti-theft system (DDS1) for FIAT vehicles.

They are designed to supplement the test instructions for VE..F.. distributor-type fuel-injection pumps.

Continue: A03/1

SPECIAL FEATURES

On VE..F distributor-type fuel-injection pumps with DDS1 this system m u s t be diagnosed and released with KTS 300 and a special test program.

* The diagnosis encompasses:
  - Actuator test and
  - Reading fault memory.

To avoid additional work DDS1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: A03/2

SPECIAL FEATURES

* Release enables the fuel-injection pump to be tested without prior disassembly of the DDS1.

The start of release is followed by a 15 minute waiting period.
During this time the ELAB is clocked at a frequency of roughly 1 Hertz.
If this process is interrupted, for example due to a break in the signal line or voltage supply, release is to be restarted.

Continue: A04/1

SPECIAL FEATURES

The KTS 300 must be connected whilst testing the fuel-injection pump.

If the KTS 300 is not switched off on completion of pump testing, the release program remains available for 30 minutes, thus enabling other pumps to be tested without having to reload the release program.

Continue: A04/2

SPECIAL FEATURES

Loading RAM module

1.. Make presetting (mode)
2.. Load basic program
3.. Select and load passenger vehicle, then components
4.. KTS 300 off, loading station set to "End"

Progam for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: A05/1

SPECIAL FEATURES

Loading of the enabling program for checking the fuel-injection pump involves implementing the following items (5...8):

5. Switch on KTS 300 again. Switch to "Self-test ..".
   Call up "1 = Components" and confirm.
   Following display then appears:
   "1 = DDS1", confirm.
   Confirm "3 = Test bench".
   Following prompt appears:
   "Enter workshop code on PC".

Continue: I05/2

SPECIAL FEATURES

6. Set to "Load further KTS 300" in menu and confirm.
   Set to "Mode" in loading program, select "Workshop code".

7. Enter workshop code and password.

8. If checking of data entered was OK, KTS 300 jumps to "Heed service information", main menu is displayed on loading station.
   This releases enabling program.

Continue: I06/1

SPECIAL FEATURES

DDS1 repair is not envisaged.

Work units will be established and issued separately.

Continue: I01/1

SAFETY PRECAUTIONS

1. DDS1 is only to be powered via 12 volt battery or with 12 volt regulator.
   Never use charger!
2. DDS1 diagnosis can only be performed with KTS 300 and a special test program. Program available on CD-ROM as of 95/7 issue.
3. When assembling DDS1 always pay attention to appropriate information in these instructions.

Continue: I07/2

SAFETY PRECAUTIONS

4. When drilling break-off screws, injection-pump openings are to be protected to prevent ingress of chips.

Continue: I01/1

TESTERS AND TOOLS

Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
12 volt regulator	comm. avail.
Test cable set	1 687 011 208
HSS drill	
diameter 3.2 mm	comm. avail.
Self-made drill bush	
(see Drawings Section)	
Screwdriver, size 3	comm. avail.
Hand countersink	
10.4 mm	comm. avail.
Hand drill	comm. avail.

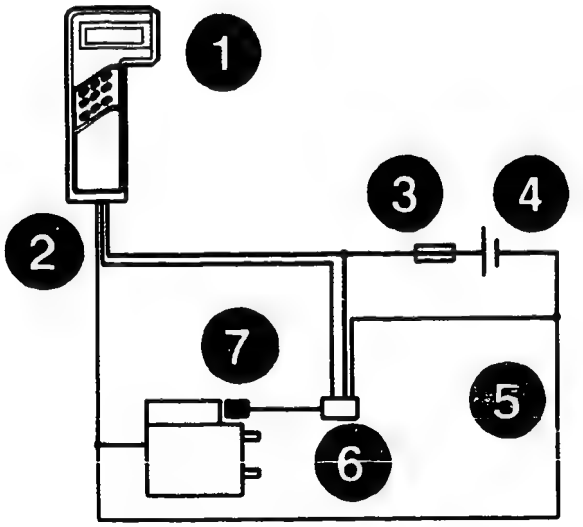
Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage regulator
(not charger)
5 = Ground lead
6 = DDS1 system connector
(Term. 1 = ground
Term. 2 = 12 V
Term. 3 = signal)
7 = DDS1

Continue: I01/1 Fig.: I09/2

KMK07571



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.
Connect up stabilizer.
Use adapters from test-cable set.
A l w a y s protect exposed sections of leads against ground contact (e.g. piece of sheathing).

Continue: I10/2

SELF-DIAGNOSIS

Preparation

Once communication has been established and provided that DDS1 and electric shut-off device (ELAB) are intact, clocking of ELAB commences.
Actuation frequency approx. 1 Hertz.
ELAB is OK if switching noise is audible.
The fault memory of the DDS1 must additionally be read to ensure that the DDS1 is OK.

If switching noise is not audible, continue on Coordinate: I15/2

Continue: I11/1

Read fault memory.

If there are no faults stored, continue on Coordinate: I15/2

Fault code: 1 I12/1

Fault code: 2 I12/2

Fault code: 4 I13/1

Fault code: 8 (code not used)

Continue: I11/2

Read fault memory.

Fault code: 10 I13/2

Fault code: 20 I14/1

Fault code: 40 I14/2

Fault code: 80 I15/1

Continue: I12/1

Fault code 1

Renew DDS1.

Continue: I12/2

Fault code 2

Renew DDS1.

Continue: I13/1

Fault code 10

Interrupt voltage supply to DDS1.

Re-connect voltage supply.
Start diagnosis program.

Renew DDS1 if fault is still present.

Continue: I14/1

Fault code 20

Disconnect KTS 300.
Interrupt voltage supply to DDS1.

Connect DDS1 to immobilizer control unit.
Switch on ignition, deactivate DDS1.
Switch off ignition.
Re-connect voltage supply and KTS 300.
Start diagnosis program.

If fault is still present, renew DDS1.
If not, DDS1 is OK.

Continue: I14/2

Fault code 40

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I15/1

Fault code 80

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I01/1

Disassemble DDS1.

Test ELAB.

ELAB OK: Renew DDS1.
ELAB defective: Renew ELAB.

Continue: I16/1

DDS1 DISASSEMBLY

The DDS1 is attached with break-off screws to the electric shut-off device (ELAB).

I m p o r t a n t:
A l w a y s seal injection-pump openings with suitable plugs to prevent ingress of chips.

Continue: I16/2

DDS1 DISASSEMBLY

Drill break-off screws with 3.2 mm diameter HSS drill to a depth of roughly 5 mm. Use drill bush for guidance (see Drawings Section). Then screw out screws using screwdriver (size 3).

I m p o r t a n t:
Always drill both break-off screws.

Continue: I17/1

DDS1 DISASSEMBLY

Carefully pull off DDS1.
Remove protective cap from electrical connection of ELAB.
Screw hexagon nut off ELAB and pull off DDS1.

Continue: I01/1

DDS1 ASSEMBLY

I m p o r t a n t:
* A l w a y s use assembly kit when assembling DDS1.
* DDS1 m a y only be operated with ELAB cable fitted.
* N e v e r tug at ELAB cable or at DDS1 with ELAB cable screwed on.
* Threads in clip and at screws must be free from grease before use.
* Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I18/2

DDS1 INSTALLATION

Position clip behind ELAB. Attach locating piece to ELAB. Insert ELAB connecting cable in locating piece. Attach connecting cable with flange nut to ELAB.
Tightening torque: 2 Nm
Fit ELAB protective cap.
Insert break-off bolts in holes in DDS1 housing.
I m p o r t a n t
Before breaking off securing bolts (item 7 of tightening instructions) a l w a y s read section:
* DDS1 installation in trouble-shooting instructions for appropriate vehicle.

Continue: I19/1

DDS1 ASSEMBLY

Tightening specification

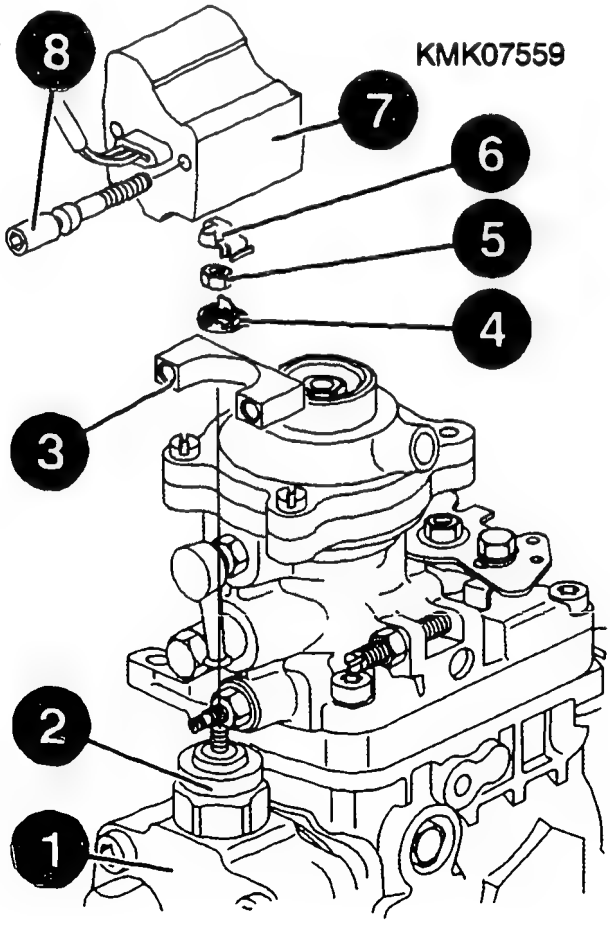
1. Screw in both screws 4 turns by hand
2. Position right screw by hand
3. Position left screw by hand and tighten with torque wrench to 1 Nm
4. Tighten right screw to 2 Nm
5. Tighten left screw to 3 Nm
6. Tighten right screw to 3 Nm
7. Break off left screw head and then right screw head

Continue: I01/1

DRAWINGS

1 = Injection pump
2 = Electric shut-off device (ELAB)
3 = Nut
4 = Clip
5 = Cap
6 = DDS1
7 = Break-off screws

Continue: I21/1 Fig.: I20/2



DRAWINGS

Self-made drill bush

Material (recommendation):
Round steel CK 10, diameter 10 h7

Dimensions

* Length:	20 mm
* OD:	10 -0.1 mm
* ID: (for drill diameter 3.2)	3.5 mm

Continue: I01/1

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Continue: I23/1

EDITORIAL NOTE

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Continue: I23/2

EDITORIAL NOTE

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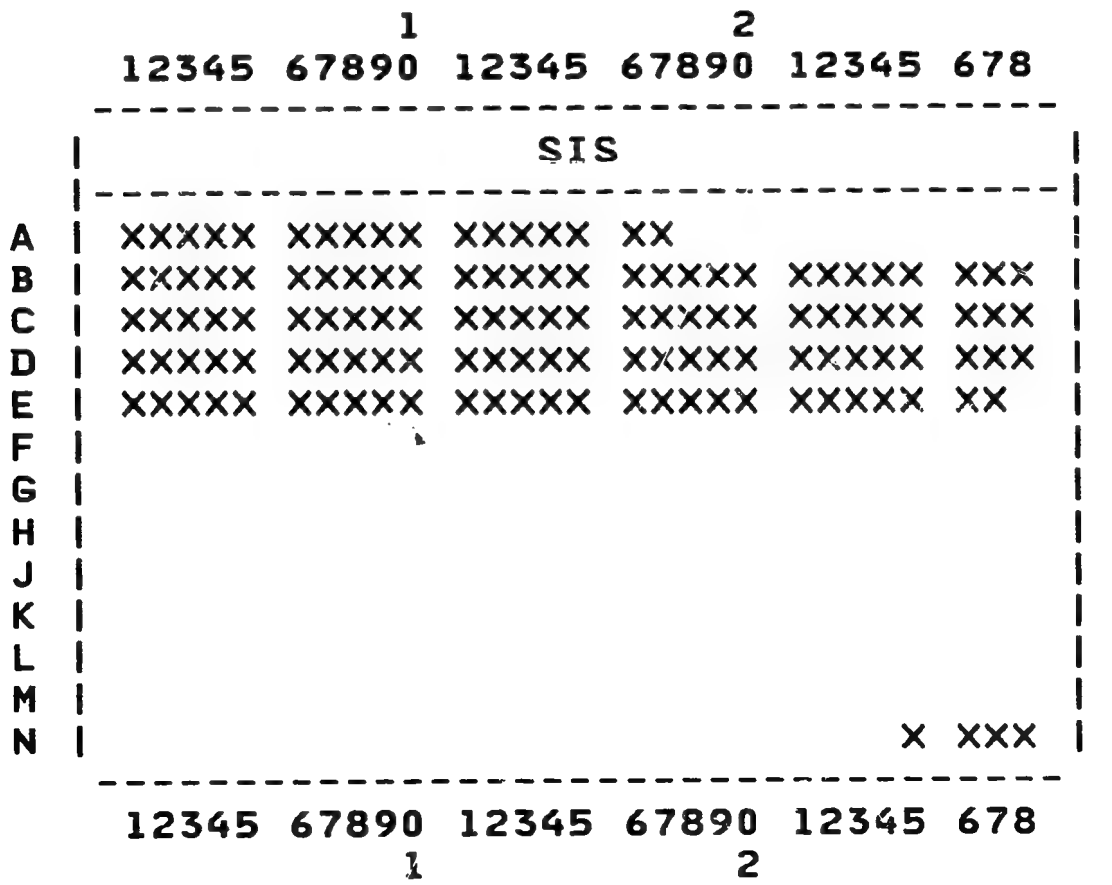
Microphotographié en République
Fédérale d'Allemagne.

Continue: I01/1

STRUCTURE OF MICROCARD

Continue: I02/1 Fig.: I01/2



Continue: I02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: I02/2

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F.. distributor-type fuel-injection pumps with Diesel anti-theft system (DDSi) for Renault vehicles.

They are designed to supplement the test instructions for VE..F.. distributor-type fuel-injection pumps.

Continue: I03/1

SPECIAL FEATURES

On VE..F distributor-type fuel-injection pumps with DDS1 this system m u s t be diagnosed and released with KTS 300 and a special test program.

* The diagnosis encompasses:
  - Actuator test and
  - Reading fault memory.

To avoid additional work DDS1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: I03/2

SPECIAL FEATURES

* Release enables the fuel-injection pump to be tested without prior disassembly of the DDS1.

The start of release is followed by a 15 minute waiting period.
During this time the ELAB is clocked at a frequency of roughly 1 Hertz.
If this process is interrupted, for example due to a break in the signal line or voltage supply, release is to be restarted.

Continue: I04/1

SPECIAL FEATURES

The KTS 300 must be connected whilst testing the fuel-injection pump.

If the KTS 300 is not switched off on completion of pump testing, the release program remains available for 30 minutes, thus enabling other pumps to be tested without having to reload the release program.

Continue: I04/2

SPECIAL FEATURES

Loading RAM module

1.. Make presetting (mode)
2.. Load basic program
3.. Select and load passenger vehicle, then components
4.. KTS 300 off, loading station set to "End"

Progam for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: I05/1

SPECIAL FEATURES

Loading of the enabling program for checking the fuel-injection pump involves implementing the following items (5...8):

5. Switch on KTS 300 again. Switch to "Self-test ..".
   Call up "1 = Components" and confirm.
   Following display then appears:
   "1 = DDS1", confirm.
   Confirm "3 = Test bench".
   Following prompt appears:
   "Enter workshop code on PC".

Continue: I05/2

SPECIAL FEATURES

6. Set to "Load further KTS 300" in menu and confirm.
   Set to "Mode" in loading program, select "Workshop code".

7. Enter workshop code and password.

8. If checking of data entered was OK, KTS 300 jumps to "Heed service information", main menu is displayed on loading station.
   This releases enabling program.

Continue: I06/1

SPECIAL FEATURES

DDS1 repair is not envisaged.

Work units will be established and issued separately.

Continue: I01/1

SAFETY PRECAUTIONS

1. DDS1 is o n l y to be powered via 12 volt battery or with 12 volt regulator.
   N e v e r use charger!
2. DDS1 diagnosis can only be performed with KTS 300 and a special test program. Program available on CD-ROM as of 95/7 issue.
3. When assembling DDS1 a l w a y s pay attention to appropriate information in these instructions.

Continue: I07/2

SAFETY PRECAUTIONS

4. When drilling break-off screws, injection-pump openings are to be protected to prevent ingress of chips.

Continue: I01/1

TESTERS AND TOOLS

Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
12 volt regulator	comm. avail.
Test cable set	1 687 011 208
HSS drill	
diameter 3.2 mm	comm. avail.
Self-made drill bush	
(see Drawings Section)	
Screwdriver, size 3	comm. avail.
Hand countersink	
10.4 mm	comm. avail.
Hand drill	comm. avail.

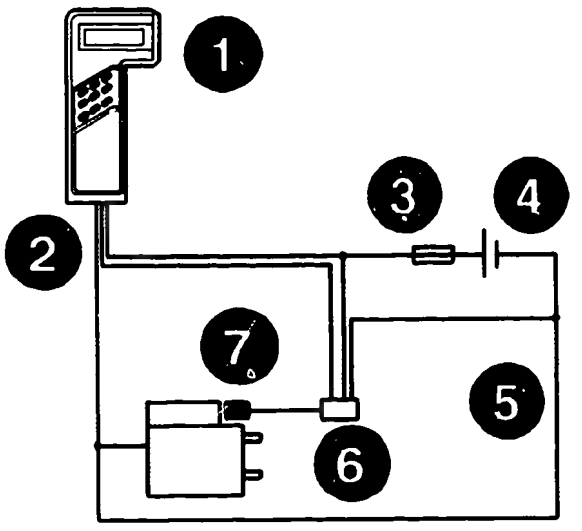
Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage regulator
(not charger)
5 = Ground lead
6 = DDS1 system connector
(Term. 1 = signal
Term. 2 = 12 V
Term. 3 = ground)
7 = DDS1

Continue: I01/1 Fig.: I09/2

KMK07571



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.
Connect up stabilizer.
Use adapters from test-cable set.
A l w a y s protect exposed sections of leads against ground contact (e.g. piece of sheathing).

Continue: I10/2

SELF-DIAGNOSIS

Preparation

Once communication has been established and provided that DDS1 and electric shut-off device (ELAB) are intact, clocking of ELAB commences.
Actuation frequency approx. 1 Hertz.
ELAB is OK if switching noise is audible.
The fault memory of the DDS1 must additionally be read to ensure that the DDS1 is OK.

If switching noise is not audible, continue on Coordinate: I15/2

Continue: I11/1

Read fault memory.

If there are no faults stored, continue on Coordinate: I15/2

Fault code: 1 I12/1

Fault code: 2 I12/2

Fault code: 4 I13/1

Fault code: 8 (code not used)

Continue: I11/2

Read fault memory.

Fault code: 10 I13/2

Fault code: 20 I14/1

Fault code: 40 I14/2

Fault code: 80 I15/1

Continue: I12/1

Fault code 1

Renew DDS1.

Continue: I12/2

Fault code 2

Renew DDS1.

Continue: I13/1

Fault code 4

Renew DDS1.

Continue: I13/2

Fault code 10

Interrupt voltage supply to DDS1.

Re-connect voltage supply.
Start diagnosis program.

Renew DDS1 if fault is still present.

Continue: I14/1

Fault code 20

Disconnect KTS 300.
Interrupt voltage supply to DDS1.

Connect DDS1 to immobilizer control unit.
Switch on ignition, deactivate DDS1.
Switch off ignition.
Re-connect voltage supply and KTS 300.
Start diagnosis program.

If fault is still present, renew DDS1.
If not, DDS1 is OK.

Continue: I14/2

Fault code 40

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I15/1

Fault code 80

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I01/1

Disassemble DDS1.

Test ELAB.

ELAB OK: Renew DDS1.
ELAB defective: Renew ELAB.

Continue: I16/1

DDS1 DISASSEMBLY

The DDS1 is attached with break-off screws to the electric shut-off device (ELAB).

I m p o r t a n t:
A l w a y s seal injection-pump openings with suitable plugs to prevent ingress of chips.

Continue: I16/2

DDS1 DISASSEMBLY

Drill break-off screws with 3.2 mm diameter HSS drill to a depth of roughly 5 mm. Use drill bush for guidance (see Drawings Section). Then screw out screws using screwdriver (size 3).

I m p o r t a n t:
Always drill both break-off screws.

Continue: I17/1

DDS1 DISASSEMBLY

Carefully pull off DDS1.
Remove protective cap from electrical connection of ELAB.
Screw hexagon nut off ELAB and pull off DDS1.

Continue: I01/1

DDS1 ASSEMBLY

I m p o r t a n t:
* A l w a y s use assembly kit when assembling DDS1.
* DDS1 m a y only be operated with ELAB cable fitted.
* N e v e r tug at ELAB cable or at DDS1 with ELAB cable screwed on.
* Threads in clip and at screws must be free from grease before use.
* Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I18/2

DDS1 INSTALLATION

Position clip behind ELAB. Attach locating piece to ELAB. Insert ELAB connecting cable in locating piece. Attach connecting cable with flange nut to ELAB.
Tightening torque: 2 Nm
Fit ELAB protective cap.
Insert break-off bolts in holes in DDS1 housing.
I m p o r t a n t
Before breaking off securing bolts (item 7 of tightening instructions) a l w a y s read section:
* DDS1 installation in trouble-shooting instructions for appropriate vehicle.

Continue: I19/1

DDS1 ASSEMBLY

Tightening specification

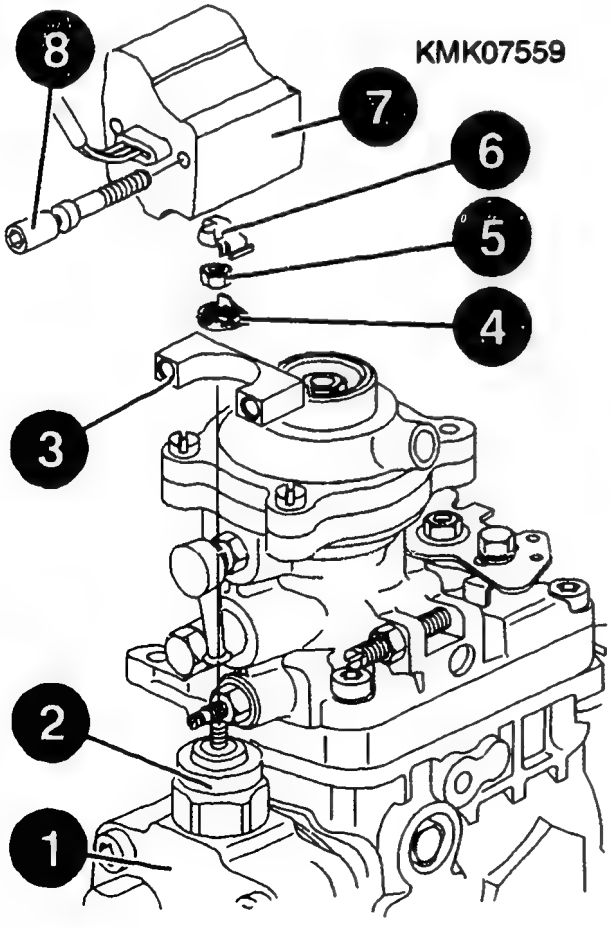
1. Screw in both screws 4 turns by hand
2. Position right screw by hand
3. Position left screw by hand and tighten with torque wrench to 1 Nm
4. Tighten right screw to 2 Nm
5. Tighten left screw to 3 Nm
6. Tighten right screw to 3 Nm
7. Break off left screw head and then right screw head

Continue: I01/1

DRAWINGS

1 = Injection pump
2 = Electric shut-off device (ELAB)
3 = Nut
4 = Clip
5 = Cap
6 = DDS1
7 = Break-off screws

Continue: I21/1 Fig.: I20/2



DRAWINGS

Self-made drill bush

Material (recommendation):
Round steel CK 10, diameter 10 h7

Dimensions

* Length:	20 mm
* OD:	10 -0.1 mm
* ID: (for drill diameter 3.2)	3.5 mm

Continue: I01/1

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Continue: I23/1

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Continue: I23/2

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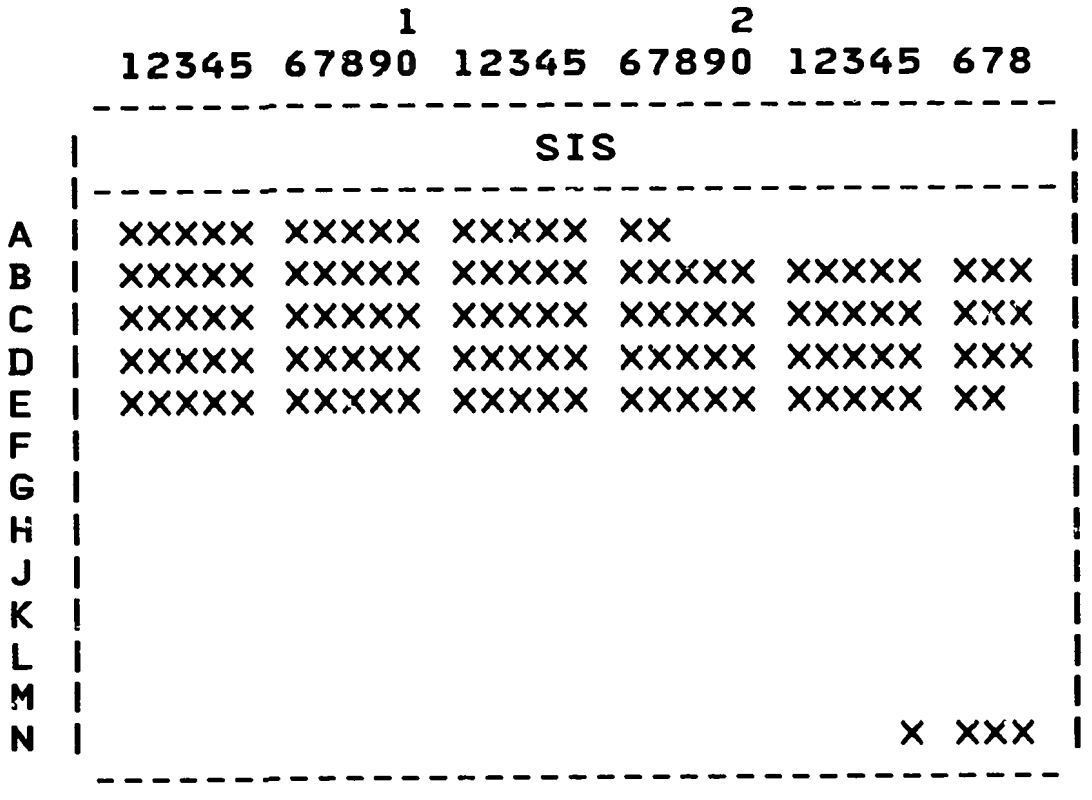
Continue: I01/1

STRUCTURE OF MICROCARD

Continue: I02/1 Fig.: I01/2



Continue: I02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: I02/2

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F.. distributor-type fuel-injection pumps with Diesel anti-theft system (DDS1) for OPEL vehicles.

They are designed to supplement the test instructions for VE..F.. distributor-type fuel-injection pumps.

Continue: I03/1

SPECIAL FEATURES

On VE..F distributor-type fuel-injection pumps with DDS1 this system m u s t be diagnosed and released with KTS 300 and a special test program.

* The diagnosis encompasses:
  - Actuator test and
  - Reading fault memory.

To avoid additional work DDS1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: I03/2

SPECIAL FEATURES

* Release enables the fuel-injection pump to be tested without prior disassembly of the DDS1.

The start of release is followed by a 15 minute waiting period.
During this time the ELAB is clocked at a frequency of roughly 1 Hertz.
If this process is interrupted, for example due to a break in the signal line or voltage supply, release is to be restarted.

Continue: I04/1

SPECIAL FEATURES

The KTS 300 **must** be connected whilst testing the fuel-injection pump.

If the KTS 300 is **not** switched off on completion of pump testing, the release program remains available for 30 minutes, thus enabling other pumps to be tested without having to reload the release program.

Continue: i04/2

SPECIAL FEATURES

Loading RAM module

1.. Make presetting (mode)
2.. Load basic program
3.. Select and load passenger vehicle, then components
4.. KTS 300 off, loading station set to "End"

Progam for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: I05/1

SPECIAL FEATURES

Loading of the enabling program for checking the fuel-injection pump involves implementing the following items (5...8):

5. Switch on KTS 300 again. Switch to "Self-test ..".
   Call up "1 = Components" and confirm.
   Following display then appears:
   "1 = DDS1", confirm.
   Confirm "3 = Test bench".
   Following prompt appears:
   "Enter workshop code on PC".

Continue: I05/2

SPECIAL FEATURES

6. Set to "Load further KTS 300" in menu and confirm.
   Set to "Mode" in loading program, select "Workshop code".

7. Enter workshop code and password.

8. If checking of data entered was OK, KTS 300 jumps to "Heed service information", main menu is displayed on loading station.
   This releases enabling program.

Continue: I06/1

SPECIAL FEATURES

DDS1 repair is not envisaged.

Work units will be established and issued separately.

Continue: I01/1

SAFETY PRECAUTIONS

1. DDS1 is only to be powered via 12 volt battery or with 12 volt regulator.
   Never use charger!
2. DDS1 diagnosis can only be performed with KTS 300 and a special test program. Program available on CD-ROM as of 95/7 issue.
3. When assembling DDS1 always pay attention to appropriate information in these instructions.

Continue: I07/2

SAFETY PRECAUTIONS

4. When drilling break-off screws, injection-pump openings are to be protected to prevent ingress of chips.

Continue: I01/1

TESTERS AND TOOLS

Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
12 volt regulator	comm. avail.
Test cable set	1 687 011 208
HSS drill	
diameter 3.2 mm	comm. avail.
Self-made drill bush	
(see Drawings Section)	
Screwdriver, size 3	comm. avail.
Hand countersink	
10.4 mm	comm. avail.
Hand drill	comm. avail.

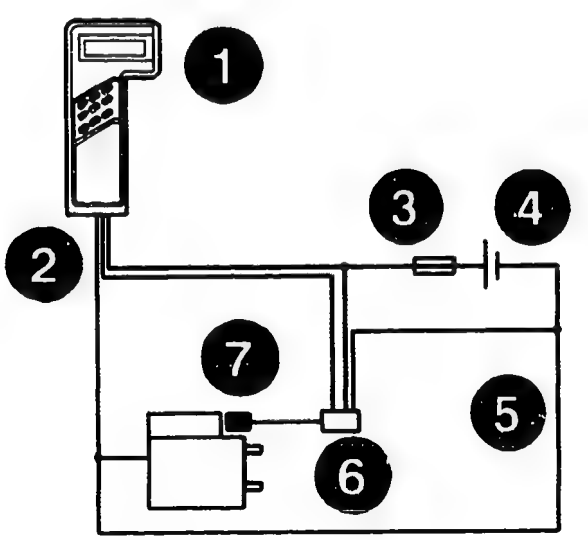
Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage regulator
(not charger)
5 = Ground lead
6 = DDS1 system connector
(Term. 1 = signal
Term. 2 = 12 V
Term. 3 = ground)
7 = DDS1

Continue: I01/1 Fig.: I09/2

KMK07571



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.
Connect up stabilizer.
Use adapters from test-cable set.
A l w a y s protect exposed sections of leads against ground contact (e.g. piece of sheathing).

Continue: I10/2

SELF-DIAGNOSIS

Preparation

Once communication has been established and provided that DDS1 and electric shut-off device (ELAB) are intact, clocking of ELAB commences.
Actuation frequency approx. 1 Hertz.
ELAB is OK if switching noise is audible.
The fault memory of the DDS1 must additionally be read to ensure that the DDS1 is OK.

If switching noise is not audible, continue on Coordinate: I15/2

Continue: I11/1

Read fault memory.

If there are no faults stored, continue on Coordinate: I15/2

Fault code: 1 I12/1

Fault code: 2 I12/2

Fault code: 4 I13/1

Fault code: 8 (code not used)

Continue: I11/2

Read fault memory.

Fault code: 10 I13/2

Fault code: 20 I14/1

Fault code: 40 I14/2

Fault code: 80 I15/1

Continue: I12/1

Fault code 1

Renew DDS1.

Continue: I12/2

Fault code 2

Renew DDS1.

Continue: I13/1

Fault code 4

Renew DDS1.

Continue: I13/2

Fault code 10

Interrupt voltage supply to DDS1.

Re-connect voltage supply.
Start diagnosis program.

Renew DDS1 if fault is still present.

Continue: I14/1

Fault code 20

Disconnect KTS 300.
Interrupt voltage supply to DDS1.

Connect DDS1 to immobilizer control unit.
Switch on ignition, deactivate DDS1.
Switch off ignition.
Re-connect voltage supply and KTS 300.
Start diagnosis program.

If fault is still present, renew DDS1.
If not, DDS1 is OK.

Continue: I14/2

Fault code 40

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I15/1

Fault code 80

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I01/1

Disassemble DDS1.

Test ELAB.

ELAB OK: Renew DDS1.
ELAB defective: Renew ELAB.

Continue: I16/1

DDS1 DISASSEMBLY

The DDS1 is attached with break-off screws to the electric shut-off device (ELAB).

I m p o r t a n t:
A l w a y s seal injection-pump openings with suitable plugs to prevent ingress of chips.

Continue: I16/2

DDS1 DISASSEMBLY

Drill break-off screws with 3.2 mm diameter HSS drill to a depth of roughly 5 mm. Use drill bush for guidance (see Drawings Section). Then screw out screws using screwdriver (size 3).

I m p o r t a n t:
Always drill both break-off screws.

Continue: I17/1

DDS1 DISASSEMBLY

Carefully pull off DDS1.
Remove protective cap from electrical connection of ELAB.
Screw hexagon nut off ELAB and pull off DDS1.

Continue: I01/1

DDS1 ASSEMBLY

I m p o r t a n t:
* A l w a y s use assembly kit when assembling DDS1.
* DDS1 m a y only be operated with ELAB cable fitted.
* N e v e r tug at ELAB cable or at DDS1 with ELAB cable screwed on.
* Threads in clip and at screws must be free from grease before use.
* Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I18/2

DDS1 INSTALLATION

Position clip behind ELAB. Attach locating piece to ELAB. Insert ELAB connecting cable in locating piece. Attach connecting cable with flange nut to ELAB.
Tightening torque: 2 Nm
Fit ELAB protective cap.
Insert break-off bolts in holes in DDS1 housing.
I m p o r t a n t
Before breaking off securing bolts (item 7 of tightening instructions) a l w a y s read section:
* DDS1 installation in trouble-shooting instructions for appropriate vehicle.

Continue: I19/1

DDS1 ASSEMBLY

Tightening specification

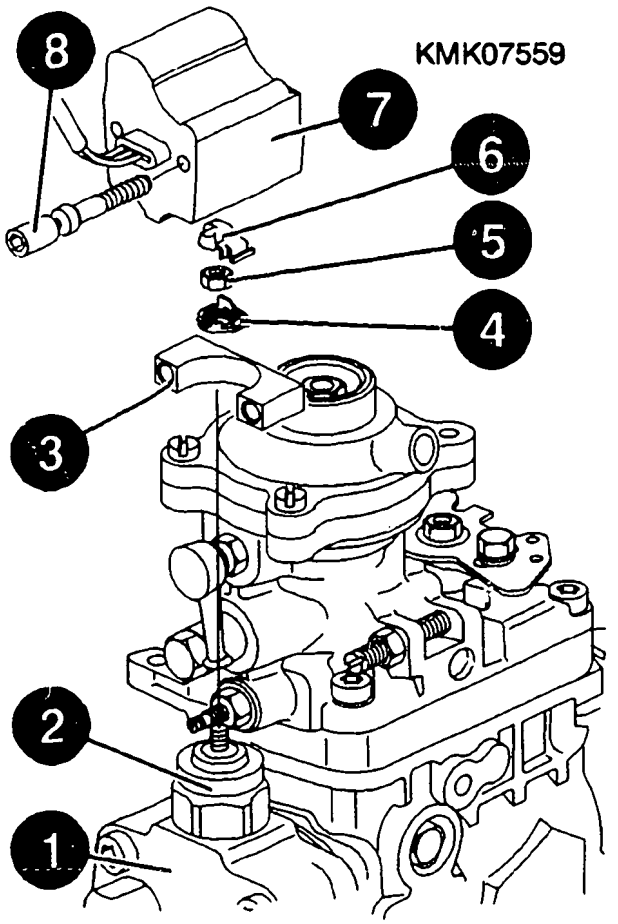
1. Screw in both screws 4 turns by hand
2. Position right screw by hand
3. Position left screw by hand and tighten with torque wrench to 1 Nm
4. Tighten right screw to 2 Nm
5. Tighten left screw to 3 Nm
6. Tighten right screw to 3 Nm
7. Break off left screw head and then right screw head

Continue: I01/1

DRAWINGS

1 = Injection pump
2 = Electric shut-off device (ELAB)
3 = Nut
4 = Clip
5 = Cap
6 = DDS1
7 = Break-off screws

Continue: I21/1 Fig.: I20/2



DRAWINGS

Self-made drill bush

Material (recommendation):
Round steel CK 10, diameter 10 h7

Dimensions

* Length:	20 mm
* OD:	10 -0.1 mm
* ID: (for drill diameter 3.2)	3.5 mm

Continue: I01/1

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Continue: I23/1

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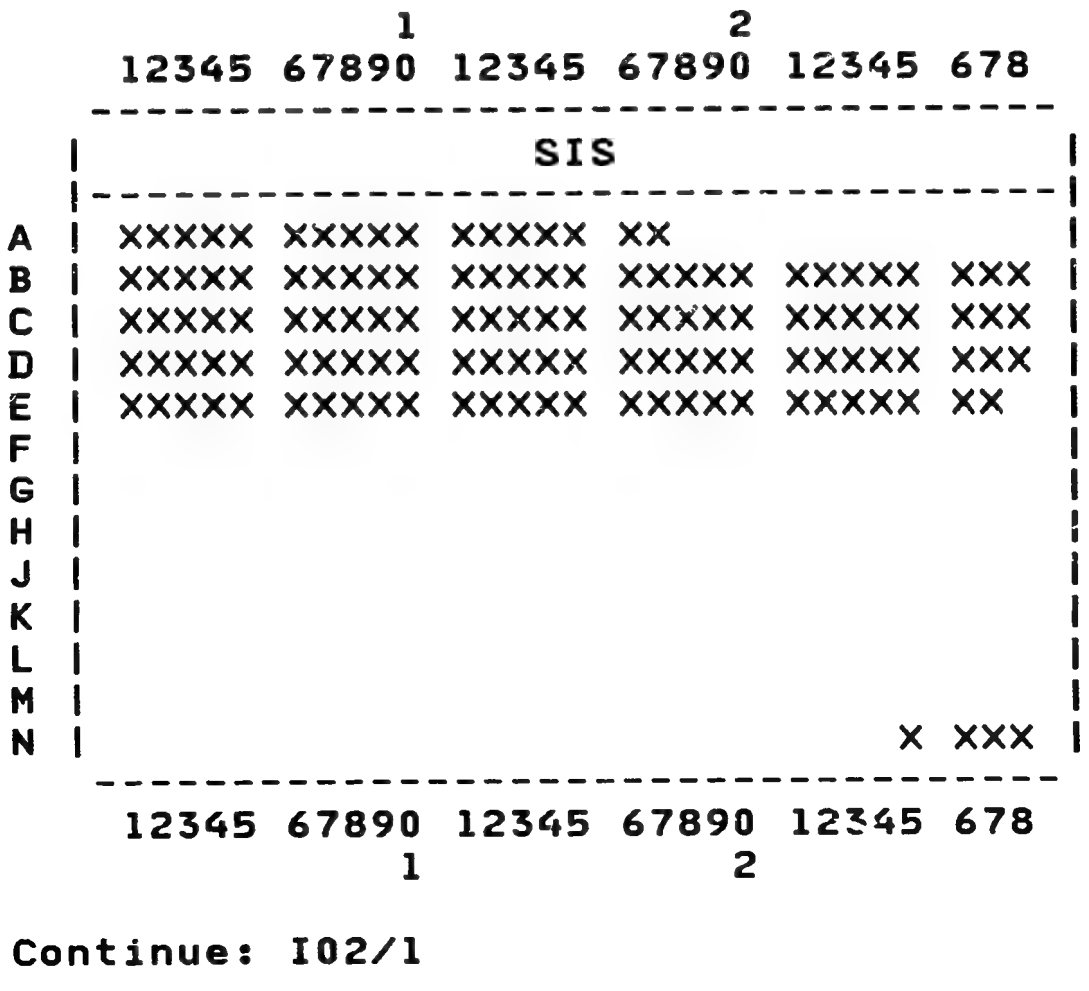
Continue: I23/2

EDITORIAL NOTE

Continue: I01/1

STRUCTURE OF MICROCARD

Continue: I02/1 Fig.: I01/2



Continue: I02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: I02/2

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F.. distributor-type fuel-injection pumps with Diesel anti-theft system (DDS1) for FORD vehicles.

They are designed to supplement the test instructions for VE..F.. distributor-type fuel-injection pumps.

Continue: I03/1

SPECIAL FEATURES

On VE..F distributor-type fuel-injection pumps with DDS1 this system m u s t be diagnosed and released with KTS 300 and a special test program.

* The diagnosis encompasses:
  - Actuator test and
  - Reading fault memory.

To avoid additional work DDS1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: I03/2

SPECIAL FEATURES

* Release enables the fuel-injection pump to be tested without prior disassembly of the DDS1.

The start of release is followed by a 15 minute waiting period.
During this time the ELAB is clocked at a frequency of roughly 1 Hertz.
If this process is interrupted, for example due to a break in the signal line or voltage supply, release is to be restarted.

Continue: I04/1

SPECIAL FEATURES

The KTS 300 must be connected whilst testing the fuel-injection pump.

If the KTS 300 is not switched off on completion of pump testing, the release program remains available for 30 minutes, thus enabling other pumps to be tested without having to reload the release program.

Continue: I04/2

SPECIAL FEATURES

Loading RAM module

1.. Make presetting (mode)
2.. Load basic program
3.. Select and load passenger vehicle, then components
4.. KTS 300 off, loading station set to "End"

Progam for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: I05/1

SPECIAL FEATURES

Loading of the enabling program for checking the fuel-injection pump involves implementing the following items (5...8):

5. Switch on KTS 300 again. Switch to "Self-test ..".
   Call up "1 = Components" and confirm.
   Following display then appears:
   "1 = DDS1", confirm.
   Confirm "3 = Test bench".
   Following prompt appears:
   "Enter workshop code on PC".

Continue: I05/2

SPECIAL FEATURES

6. Set to "Load further KTS 300" in menu and confirm.
   Set to "Mode" in loading program, select "Workshop code".

7. Enter workshop code and password.

8. If checking of data entered was OK, KTS 300 jumps to "Heed service information", main menu is displayed on loading station.
   This releases enabling program.

Continue: I06/1

SPECIAL FEATURES

DDS1 repair is not envisaged.

Work units will be established and issued separately.

Continue: i01/1

SAFETY PRECAUTIONS

1. DDS1 is o n l y to be powered via 12 volt battery or with 12 volt regulator.
   N e v e r use charger!
2. DDS1 diagnosis can only be performed with KTS 300 and a special test program. Program available on CD-ROM as of 95/7 issue.
3. When assembling DDS1 a l w a y s pay attention to appropriate information in these instructions.

Continue: I07/2

SAFETY PRECAUTIONS

4. When drilling break-off screws, injection-pump openings are to be protected to prevent ingress of chips.

Continue: i01/1

TESTERS AND TOOLS

Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
12 V regulator	comm. avail.
Test cable set	1 687 011 208

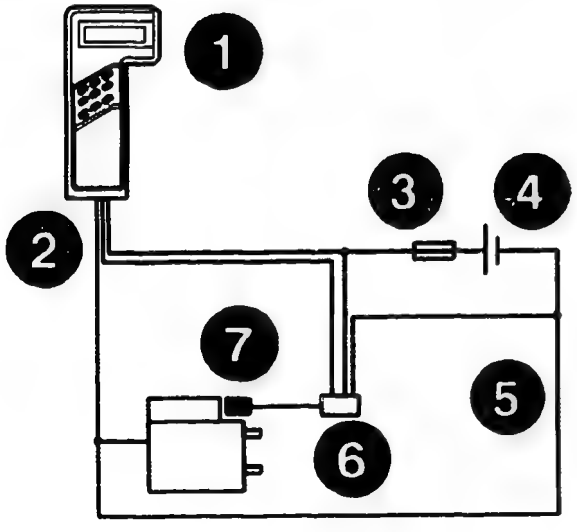
Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage regulator
(not charger)
5 = Ground lead
6 = DDS1 system connector
(Term. 5 = 12 V
Term. 7 = signal
Term. 8 = ground)
7 = DDS1

Continue: I10/1 Fig.: I09/2

KMK07571



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.
Connect up stabilizer.
Use adapters from test-cable set.
A l w a y s protect exposed sections of leads against ground contact (e.g. piece of sheathing).

Continue: I10/2

SELF-DIAGNOSIS

Preparation

Once communication has been established and provided that DDS1 and electric shut-off device (ELAB) are intact, clocking of ELAB commences.
Actuation frequency approx. 1 Hertz.
ELAB is OK if switching noise is audible.
The fault memory of the DDS1 must additionally be read to ensure that the DDS1 is OK.

If switching noise is not audible, continue on Coordinate: I15/2

Continue: I11/1

Read fault memory.

If there are no faults stored, continue on Coordinate: I15/2

Fault code: 1 I12/1

Fault code: 2 I12/2

Fault code: 4 I13/1

Fault code: 8 (code not used)

Continue: i11/2

Read fault memory.

Fault code: 10 I13/2

Fault code: 20 I14/1

Fault code: 40 I14/2

Fault code: 80 I15/1

Continue: I12/1

Fault code 1

Renew DDS1.

Continue: I12/2

Fault code 2

Renew DDS1.

Continue: I13/1

Fault code 4

Renew DDS1.

Continue: I13/2

Fault code 10

Interrupt voltage supply to DDS1.

Re-connect voltage supply.
Start diagnosis program.

Renew DDS1 if fault is still present.

Continue: I14/1

Fault code 20

Disconnect KTS 300.
Interrupt voltage supply to DDS1.

Connect DDS1 to immobilizer control unit.
Switch on ignition, deactivate DDS1.
Switch off ignition.
Re-connect voltage supply and KTS 300.
Start diagnosis program.

If fault is still present, renew DDS1.
If not, DDS1 is OK.

Continue: I14/2

Fault code 40

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I15/1

Fault code 80

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I01/1

Disassemble DDS1.

Test ELAB.

ELAB OK: Renew DDS1.
ELAB defective: Renew ELAB.

Continue: I16/1

DDS1 DISASSEMBLY

The DDS1 is attached by way of hexagon socket head bolts to the electric shut-off device (ELAB).

Continue: i16/2

DDS1 DISASSEMBLY

Disconnect voltage supply to DDS1.
Dismantle support bracket.
Screw out hexagon socket head bolts at DDS1.

Continue: I17/1

DDS1 DISASSEMBLY

Carefully pull off DDS1.
Remove protective cap from electrical connection of ELAB.
Screw hexagon nut off ELAB and pull off DDS1.

Continue: I01/1

DDS1 ASSEMBLY

I m p o r t a n t:
* A l w a y s use assembly kit when assembling DDS1.
* DDS1 m a y only be operated with ELAB cable fitted.
* N e v e r tug at ELAB cable or at DDS1 with ELAB cable screwed on.
* Threads in clip and at screws must be free from grease before use.
* Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I18/2

DDS1 INSTALLATION

Position clip behind ELAB. Attach locating piece to ELAB. Insert ELAB connecting cable in locating piece. Attach connecting cable with flange nut to ELAB.
Tightening torque: 2 Nm
Fit ELAB protective cap.
Insert hexagon socket head bolts in holes in DDS1 housing.
I m p o r t a n t
Before final tightening of bolts (as of item 4 of tightening instructions) a l w a y s read Section:
* DDS1 installation in trouble-shooting instructions for appropriate vehicle.

Continue: I19/1

DDS1 INSTALLATION

Tightening instructions

1. Screw in both bolts 4 turns by hand
2. Place right bolt in position by hand
3. Place left bolt in position by hand and tighten with torque wrench to 1 Nm
4. Tighten right bolt to 2 Nm
5. Tighten left bolt to 3 Nm
6. Tighten right bolt to 3 Nm

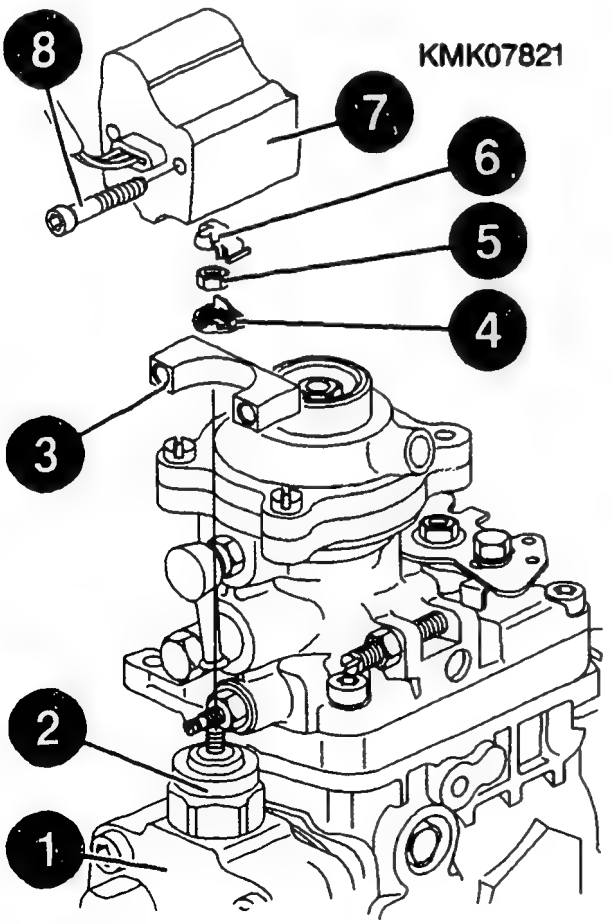
Fit support bracket (take tightening torques from repair instructions for VE..F distributor-type fuel-injection pumps).

Continue: I01/1

DRAWINGS

1 = Injection pump
2 = Electric shut-off device (ELAB)
3 = Clip
4 = Locating piece
5 = Flange nut
6 = Protective cap
7 = DDS1
8 = Hexagon socket head bolt

Continue: I01/1 Fig.: I20/2



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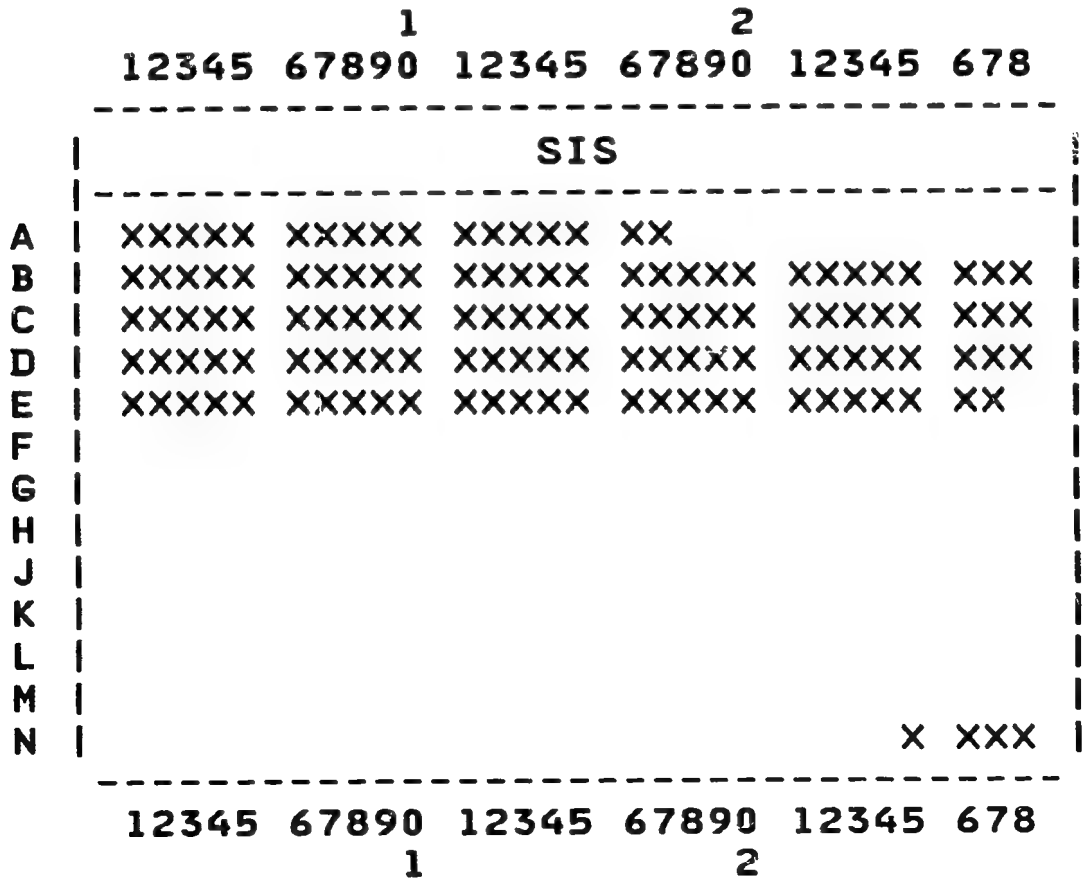
Continue: I22/2

EDITORIAL NOTE

Continue: I01/1

STRUCTURE OF MICROCARD

Continue: I02/1 Fig.: I01/2



Continue: I02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: I02/2

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F distributor-type fuel-injection pumps with Diesel anti-theft protection system (DDS1) from
ZEXEL

They supplement the test instructions for VE..F distributor-type fuel-injection pumps.

Continue: I03/1

SPECIAL FEATURES

On VE..F distributor-type fuel-injection pumps with DDS1 this system m u s t be diagnosed and released with KTS 300 and a special test program.

* The diagnosis encompasses:
  - Actuator test and
  - Reading fault memory.

To avoid additional work DDS1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: I03/2

SPECIAL FEATURES

* Release enables the fuel-injection pump to be tested without prior disassembly of the DDS1.

The start of release is followed by a 15 minute waiting period.
During this time the ELAB is clocked at a frequency of roughly 1 Hertz.
If this process is interrupted, for example due to a break in the signal line or voltage supply, release is to be restarted.

Continue: I04/1

SPECIAL FEATURES

The KTS 300 m u s t be connected whilst testing the fuel-injection pump.

If the KTS 300 is n o t switched off on completion of pump testing, the release program remains available for 30 minutes, thus enabling other pumps to be tested without having to reload the release program.

Continue: I04/2

SPECIAL FEATURES

L o a d i n g RAM module

1.. Make presetting (mode)
2.. Load basic program
3.. Select and load passenger vehicle, then components
4.. KTS 300 off, loading station set to "End"

Progam for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: I05/1

SPECIAL FEATURES

Loading of the enabling program for checking the fuel-injection pump involves implementing the following items (5...8):

5. Switch on KTS 300 again. Switch to "Self-test ..".
   Call up "1 = Components" and confirm.
   Following display then appears:
   "1 = DDS1", confirm.
   Confirm "3 = Test bench".
   Following prompt appears:
   "Enter workshop code on PC".

Continue: I05/2

SPECIAL FEATURES

6. Set to "Load further KTS 300" in menu and confirm.
   Set to "Mode" in loading program, select "Workshop code".

7. Enter workshop code and password.

8. If checking of data entered was OK, KTS 300 jumps to "Heed service information", main menu is displayed on loading station.
   This releases enabling program.

Continue: I06/1

SPECIAL FEATURES

DDS1 repair is not envisaged.

Work units will be established and issued separately.

Continue: I01/1

SAFETY PRECAUTIONS

1. DDS1 is only to be powered via 12 volt battery or with 12 volt regulator.
   Never use charger!
2. DDS1 diagnosis can only be performed with KTS 300 and a special test program. Program available on CD-ROM as of 95/7 issue.
3. When assembling DDS1 always pay attention to appropriate information in these instructions.

Continue: I07/2

SAFETY PRECAUTIONS

4. When drilling break-off screws, injection-pump openings are to be protected to prevent ingress of chips.

Continue: I01/1

TESTERS AND TOOLS

Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
12 volt regulator	comm. avail.
Test cable set	1 687 011 208
HSS drill	
diameter 3.2 mm	comm. avail.
Self-made drill bush	
(see Drawings Section)	
Screwdriver, size 3	comm. avail.
Hand countersink	
10.4 mm	comm. avail.
Hand drill	comm. avail.

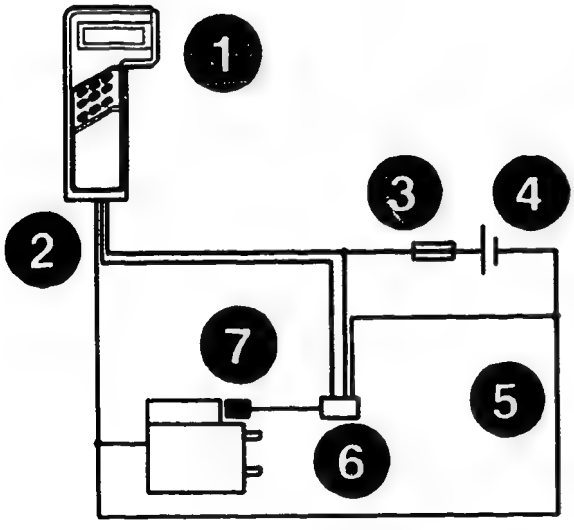
Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage regulator
(not charger)
5 = Ground lead
6 = DDS1 system connector
(Term. 1 = signal
Term. 2 = 12 V
Term. 3 = ground)
7 = DDS1

Continue: I10/1 Fig.: I09/2

KMK07571



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.
Connect up stabilizer.
Use adapters from test-cable set.
A l w a y s protect exposed sections of leads against ground contact (e.g. piece of sheathing).

Continue: I10/2

SELF-DIAGNOSIS

Preparation

Once communication has been established and provided that DDS1 and electric shut-off device (ELAB) are intact, clocking of ELAB commences.
Actuation frequency approx. 1 Hertz.
ELAB is OK if switching noise is audible.
The fault memory of the DDS1 must additionally be read to ensure that the DDS1 is OK.

If switching noise is not audible, continue on Coordinate: I15/2

Continue: I11/1

Read fault memory.

If there are no faults stored,
continue on Coordinate: I15/2

Fault code: 1 I12/1

Fault code: 2 I12/2

Fault code: 4 I13/1

Fault code: 8 (code not used)

Continue: I11/2

Read fault memory.

Fault code: 10 I13/2

Fault code: 20 I14/1

Fault code: 40 I14/2

Fault code: 80 I15/1

Continue: I12/1

Fault code 1

Renew DDS1.

Continue: I12/2

Fault code 2

Renew DDS1.

Continue: I13/1

Fault code 4

Renew DDS1.

Continue: I13/2

Fault code 10

Interrupt voltage supply to DDS1.

Re-connect voltage supply.
Start diagnosis program.

Renew DDS1 if fault is still present.

Continue: I14/1

Fault code 20

Disconnect KTS 300.
Interrupt voltage supply to DDS1.

Connect DDS1 to immobilizer control unit.
Switch on ignition, deactivate DDS1.
Switch off ignition.
Re-connect voltage supply and KTS 300.
Start diagnosis program.

If fault is still present, renew DDS1.
If not, DDS1 is OK.

Continue: I14/2

Fault code 40

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I15/1

Fault code 80

No fault in DDS1.

Check lead between DDS1 and immobilizer control unit.
Immobilizer control unit is defective if lead is OK.

Continue: I01/1

Disassemble DDS1.

Test ELAB.

ELAB OK: Renew DDS1.
ELAB defective: Renew ELAB.

Continue: I16/1

DDS1 DISASSEMBLY

The DDS1 is attached with break-off screws to the electric shut-off device (ELAB).

I m p o r t a n t:
A l w a y s seal injection-pump openings with suitable plugs to prevent ingress of chips.

Continue: I16/2

DDS1 DISASSEMBLY

Drill break-off screws with 3.2 mm diameter HSS drill to a depth of roughly 5 mm. Use drill bush for guidance (see Drawings Section). Then screw out screws using screwdriver (size 3).

I m p o r t a n t:
Always drill both break-off screws.

Continue: I17/1

DDS1 DISASSEMBLY

Carefully pull off DDS1.
Remove protective cap from electrical connection of ELAB.
Screw hexagon nut off ELAB and pull off DDS1.

Continue: I01/1

DDS1 ASSEMBLY

I m p o r t a n t:
* A l w a y s use assembly kit when assembling DDS1.
* DDS1 m a y only be operated with ELAB cable fitted.
* N e v e r tug at ELAB cable or at DDS1 with ELAB cable screwed on.
* Threads in clip and at screws must be free from grease before use.
* Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I18/2

DDS1 INSTALLATION

Position clip behind ELAB. Attach locating piece to ELAB. Insert ELAB connecting cable in locating piece. Attach connecting cable with flange nut to ELAB.
Tightening torque: 2 Nm
Fit ELAB protective cap.
Insert break-off bolts in holes in DDS1 housing.
I m p o r t a n t
Before breaking off securing bolts (item 7 of tightening instructions) a l w a y s read section:
* DDS1 installation in trouble-shooting instructions for appropriate vehicle.

Continue: I19/1

DDS1 ASSEMBLY

Tightening specification

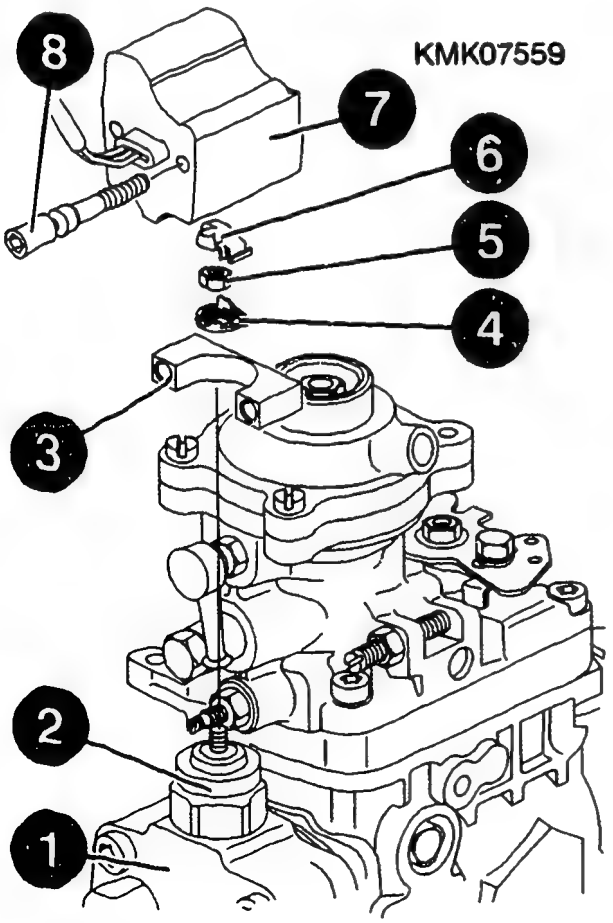
1. Screw in both screws 4 turns by hand
2. Position right screw by hand
3. Position left screw by hand and tighten with torque wrench to 1 Nm
4. Tighten right screw to 2 Nm
5. Tighten left screw to 3 Nm
6. Tighten right screw to 3 Nm
7. Break off left screw head and then right screw head

Continue: I01/1

DRAWINGS

1 = Injection pump
2 = Electric shut-off device (ELAB)
3 = Nut
4 = Clip
5 = Cap
6 = DDS1
7 = Break-off screws

Continue: I21/1 Fig.: I20/2



DRAWINGS

Self-made drill bush

Material (recommendation):
Round steel CK 10, diameter 10 h7

Dimensions

* Length:	20 mm
* OD:	10 -0.1 mm
* ID: (for drill diameter 3.2)	3.5 mm

Continue: I01/1

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Continue: I23/1

EDITORIAL NOTE

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concerning the contents to our
authorized representative in your
country.

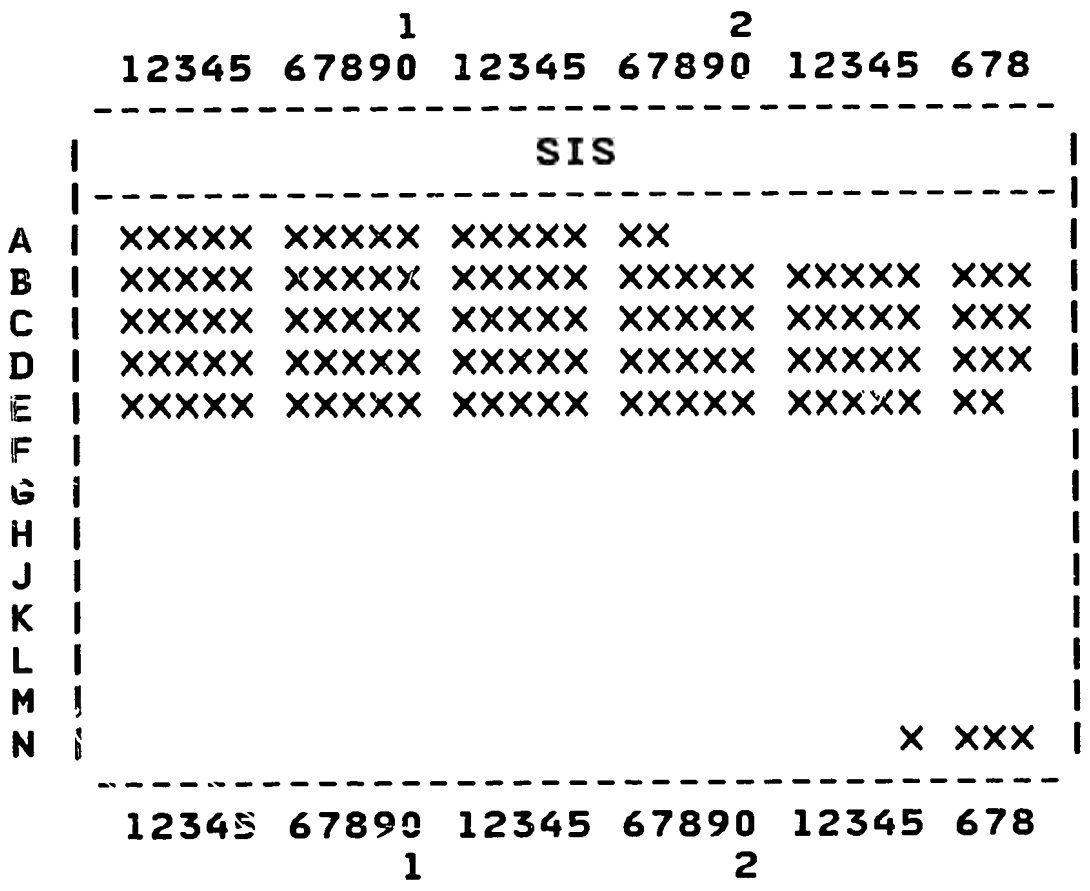
Continue: I23/2

EDITORIAL NOTE

Continue: I01/1

STRUCTURE OF MICROCARD

Continue: I02/1 Fig.: I01/2



Continue: I02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: I02/2

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F.. distributor-type fuel-injection pumps with Diesel anti-theft system (DDS1) for Citroen/Peugeot vehicles.

They are designed to supplement the test instructions for VE..F.. distributor-type fuel-injection pumps.

Continue: I03/1

SPECIAL FEATURES

A l w a y s heed the following:

Removal from vehicle:

Before detaching system connection, DDS1 is to be released (refer also to vehicle-specific instructions) by way of keypad (immobilizer).
I m p o r t a n t:
Ignition m u s t be switched on when detaching system connection.
If this is not the case, the DDS1 will not be released.

Continue: I03/2

SPECIAL FEATURES

Delivery of injection pump with DDS1 by authorized Peugeot workshop:

Delivery of the injection pump must be accompanied by a certificate of DDS1 release. If no certificate is provided, the pump must be sent back (refer also to vehicle-specific instructions) for release by way of the keypad (in vehicle from which pump has been removed).

Continue: I04/1

SPECIAL FEATURES

On VE..F distributor-type fuel-injection pumps with DDS1 this system m u s t be diagnosed and released with KTS 300 and a special test program.

* The diagnosis encompasses:
  - Actuator test and
  - Reading fault memory.

To avoid additional work DDS1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: I04/2

SPECIAL FEATURES

The DDS1 does n o t have to be enabled with the KTS 300.

The released DDS1 is merely to be connected to the voltage supply (see electrical terminal diagram).

Continue: I05/1

SPECIAL FEATURES

L o a d i n g RAM module

1.. Make presetting (mode)
2.. Load basic program
3.. Select and load passenger vehicle, then components
4.. KTS 300 off, loading station set to "End"

Progam for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: I05/2

SPECIAL FEATURES

DDS1 repair is not envisaged.

Work units will be established and issued separately.

Continue: I01/1

SAFETY PRECAUTIONS

1. DDS1 is o n l y to be powered via 12 volt battery or with 12 volt regulator.
   N e v e r use charger!
2. DDS1 diagnosis can only be performed with KTS 300 and a special test program. Program available on CD-ROM as of 95/7 issue.
3. When assembling DDS1 a l w a y s pay attention to appropriate information in these instructions.

Continue: I06/2

SAFETY PRECAUTIONS

4. When drilling break-off screws, injection-pump openings are to be protected to prevent ingress of chips.

Continue: I01/1

TESTERS AND TOOLS

Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
12 volt regulator	comm. avail.
Test cable set	1 687 011 208
HSS drill	
diameter 3.2 mm	comm. avail.
Self-made drill bush	
(see Drawings Section)	
Screwdriver, size 3	comm. avail.
Hand countersink	
10.4 mm	comm. avail.
Hand drill	comm. avail.

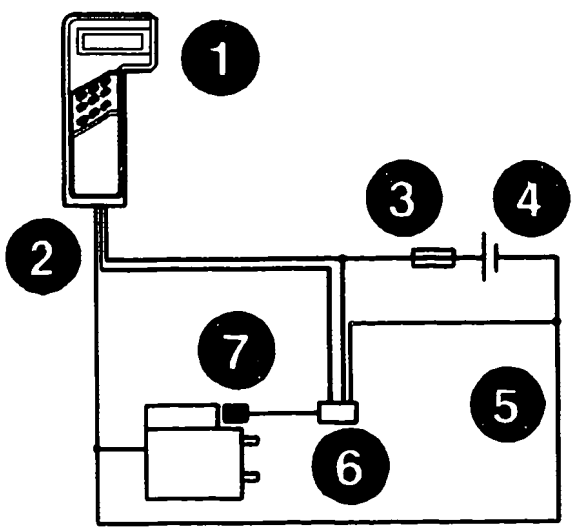
Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage regulator (not charger)
5 = Ground lead
6 = DDS1 system connector
(Term. 1 = 12 V
Term. 2 = not used
Term. 3 = signal
Term. 4 = ground)
7 = DDS1

Continue: I01/1 Fig.: I08/2

KMK07571



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.
Connect up stabilizer.
Use adapters from test-cable set.
A l w a y s protect exposed sections of leads against ground contact (e.g. piece of sheathing).

Continue: I09/2

SELF-DIAGNOSIS

Preparation

Following establishment of communication and provided that both DDS1 and electric shut-off device (ELAB) are intact, ELAB clocking starts.
Actuation frequency approx. 1 Hertz.
ELAB is OK if switching noise is audible.
Fault memory of DDS1 must also be read to ensure that DDS1 is OK.

If switching noise is not heard, continue on Coordinate: I15/2

Continue: I10/1

SELF-DIAGNOSIS

Preparation

If communication is repeatedly interrupted during its establishment, check terminal assignment.

Renew DDS1 if terminal assignment is OK.

Continue: I11/1

Read fault memory.

If there are no faults stored, continue on Coordinate: I15/1

Fault code: 1 I12/1

Fault code: 2 I12/2

Fault code: 4 I13/1

Fault code: 8 (code not used)

Continue: I11/2

Read fault memory.

Fault code: 10 I13/2

Fault code: 20 I14/1

Fault code: 40 I14/2

Fault code: 80 I15/1

Continue: I12/1

Fault code 1

Open circuit in voltage supply to DDS1.

Switch voltage supply on again.

Restart KTS 300.
Renew DDS1 if fault still present.
DDS1 is OK if this eliminates the fault.

Continue: I12/2

Fault code 2

Renew DDS1.

Continue: I13/1

Fault code 4

Renew DDS1.

Continue: I13/2

Fault code 10

Interrupt voltage supply to DDS1.

Re-connect voltage supply.
Start diagnosis program.

Renew DDS1 if fault is still present.

Continue: I14/1

Fault code 20

No fault in DDS1.

Fault probably in system connection between keypad (immobilizer) and DDS1.
Check system connection. If it is OK, then keypad (immobilizer) is defective.

Continue: I14/2

Fault code 40

No fault in DDS1.

Fault probably in system connection between keypad (immobilizer) and DDS1.
Check system connection. If it is OK, then keypad (immobilizer) is defective.

Continue: I15/1

Fault code 80

No fault in DDS1.

Fault probably in system connection between keypad (immobilizer) and DDS1.
Check system connection. If it is OK, then keypad (immobilizer) is defective.

Continue: I16/1

Disassemble DDS1.

Test ELAB.

ELAB OK: Renew DDS1.
ELAB defective: Renew ELAB.

Continue: I16/2

DDS1 DISASSEMBLY

The DDS1 is attached with break-off screws to the electric shut-off device (ELAB).

I m p o r t a n t:
A l w a y s seal injection-pump openings with suitable plugs to prevent ingress of chips.

Continue: I17/1

DDS1 DISASSEMBLY

Drill break-off screws with 3.2 mm diameter HSS drill to a depth of roughly 5 mm. Use drill bush for guidance (see Drawings Section). Then screw out screws using screwdriver (size 3).

I m p o r t a n t:
Always drill both break-off screws.

Continue: I17/2

DDS1 DISASSEMBLY

Carefully pull off DDS1.
Remove protective cap from electrical connection of ELAB.
Screw hexagon nut off ELAB and pull off DDS1.

Continue: I01/1

DDS1 ASSEMBLY

I m p o r t a n t:
* A l w a y s use assembly kit when assembling DDS1.
* DDS1 m a y only be operated with ELAB cable fitted.
* N e v e r tug at ELAB cable or at DDS1 with ELAB cable screwed on.
* Threads in clip and at screws must be free from grease before use.
* Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I18/2

DDS1 INSTALLATION

Position clip behind ELAB. Attach locating piece to ELAB. Insert ELAB connecting cable in locating piece. Attach connecting cable with flange nut to ELAB.
Tightening torque: 2 Nm
Fit ELAB protective cap.
Insert break-off bolts in holes in DDS1 housing.
I m p o r t a n t
Before breaking off securing bolts (item 7 of tightening instructions) a l w a y s read section:
* DDS1 installation in trouble-shooting instructions for appropriate vehicle.

Continue: I19/1

DDS1 ASSEMBLY

Tightening specification

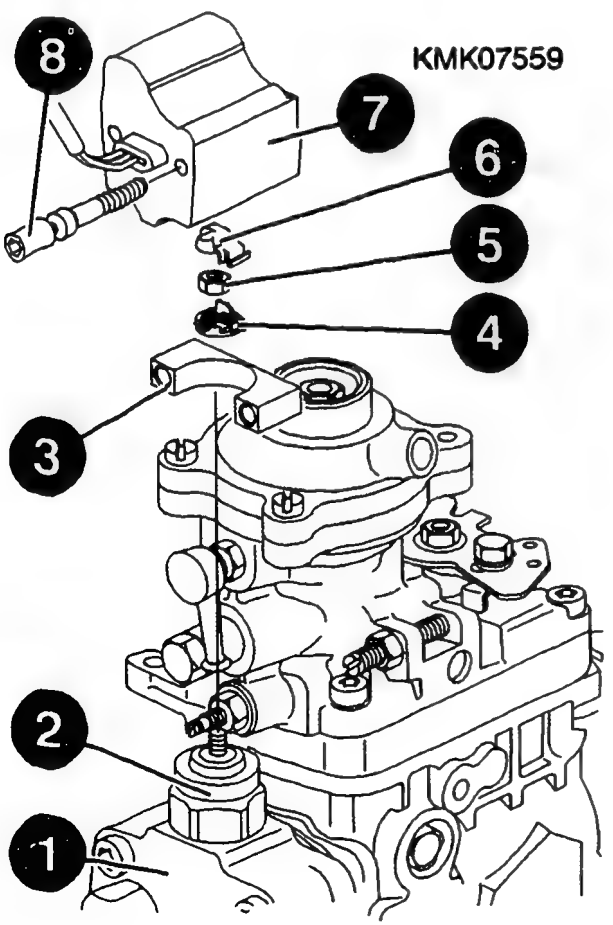
1. Screw in both screws 4 turns by hand
2. Position right screw by hand
3. Position left screw by hand and tighten with torque wrench to 1 Nm
4. Tighten right screw to 2 Nm
5. Tighten left screw to 3 Nm
6. Tighten right screw to 3 Nm
7. Break off left screw head and then right screw head

Continue: I01/1

DRAWINGS

1 = Injection pump
2 = Electric shut-off device (ELAB)
3 = Nut
4 = Clip
5 = Cap
6 = DDS1
7 = Break-off screws

Continue: I21/1 Fig.: I20/2



DRAWINGS

Self-made drill bush

Material (recommendation):
Round steel CK 10, diameter 10 h7

Dimensions

* Length:	20 mm
* OD:	10 -0.1 mm
* ID: (for drill diameter 3.2)	3.5 mm

Continue: I01/1

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Continue: I23/1

EDITORIAL NOTE

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Continue: I23/2

EDITORIAL NOTE

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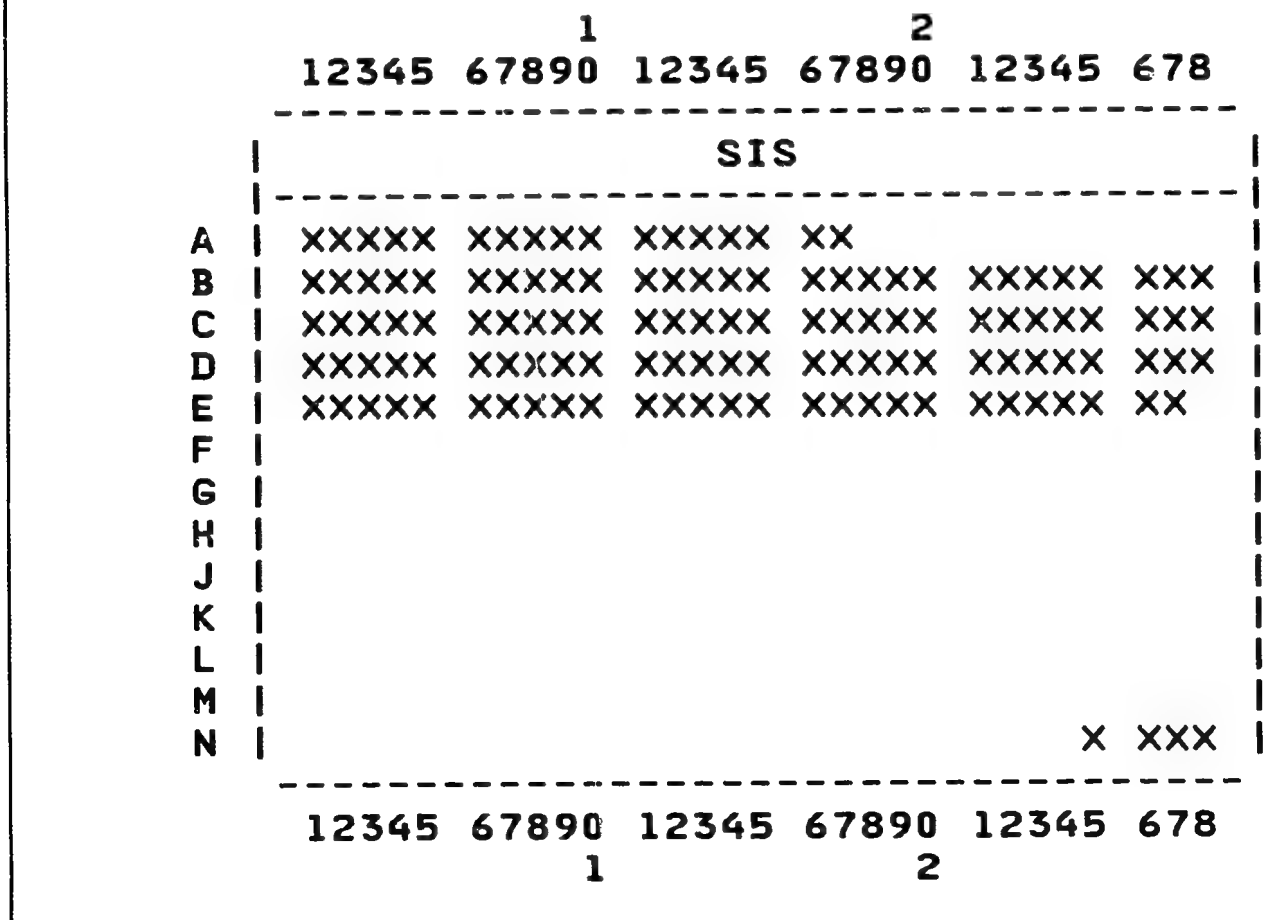
Fédérale d'Allemagne.

Continue: I01/1

STRUCTURE OF MICROCARD

Continue: I02/1 Fig.: I01/2



Continue: I02/1

STRUCTURE OF MICROCARD

The user prompting appears on every page, e.g.
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: I03/1

SPECIAL FEATURES

These instructions apply to all mechanically governed VE..F distributor-type fuel-injection pumps with Diesel anti-theft protection system (DDS1) from
PSA

They supplement the test instructions for VE..F distributor-type fuel-injection pumps.

Continue: I03/2

SPECIAL FEATURES

A l w a y s heed the following information!

Removal from vehicle:

Switch on ignition.
Release (refer to vehicle-specific instructions) DDS by entering code on keypad (immobilizer). Then detach system connection with ignition switched on.

Continue: I04/1

SPECIAL FEATURES

The DDS 1.1+ consists of:
* DDS 1.1
plus (+) a
* special cast housing
which surrounds the DDS 1.1 and thus provides additional protection against unauthorized disassembly.
This case housing is attached by means of high-strength shear bolts to the support bracket and distributor head of the fuel-injection pump.

Continue: I04/2

SPECIAL FEATURES

Delivery of injection pump with DDS1 by authorized Peugeot workshop:

Delivery of the injection pump must be accompanied by a certificate of DDS1 release. If no certificate is provided, the pump must be sent back (refer also to vehicle-specific instructions) for release by way of the keypad (in vehicle from which pump has been removed).

Continue: I05/1

SPECIAL FEATURES

Diagnosis must be performed on VE..F distributor-type fuel-injection pumps with DDS using the KTS 300 and a special DDS 1.1 test program.

* Diagnosis involves:
  - Actuator test
  - Reading of fault memory

DDS 1.1 diagnosis is to be performed before clamping and testing the fuel-injection pump.

Continue: I05/2

SPECIAL FEATURES

The DDS1 does not have to be enabled with the KTS 300.

The released DDS1 is merely to be connected to the voltage supply (see electrical terminal diagram).

Continue: I06/1

SPECIAL FEATURES

L o a d i n g RAM module

1.. Make presetting (mode)
2.. Load basic program
3.. Select and load passenger vehicle, then components
4.. KTS 300 off, loading station set to "End"

Progam for

* Actuator test and
* Reading fault memory

is thus loaded.

Continue: I06/2

SPECIAL FEATURES

DDS 1.1 repairs are not envisaged.

Work units will be established and published separately.

Continue: I01/1

SAFETY REGULATIONS

1. DDS 1.1 is o n l y to be supplied with voltage via a 12 V battery or with a 12 V stabilizer.
   N e v e r use charger!

2. DDS 1.1 diagnosis can o n l y be performed using KTS 300 and a special test program. The program is available on CD-ROM as of edition 95/7.

3. A l w a y s heed the information given in these instructions when assembling DDS 1.1 and cast housing.

Continue: I07/2

SAFETY REGULATIONS

4. Always use the appropriate drilling template when drilling the shear bolts.
   This template already accommodates the covers for the pressure connections.
5. Electrical connection to the ELAB must be made before applying supply voltage to DDS1 (ELAB output stage is n o t short-circuit proof).
   Fit ELAB protective cap.
6. Always renew ELAB and clip after disassembling or replacing DDS1.

Continue: I01/1

TESTERS AND TOOLS

Pocket system tester	
KTS 300	0 984 400 300
RAM module	1 687 023 085
Universal test lead	1 684 465 200
Stabilizer, 12 V	comm. avail.
Test cable set	1 687 011 208
HSS drill	
diameter 8 mm	comm. avail.
HSS drill	
diameter 5 mm	comm. avail.
Drilling template	0 986 612 679
Screwdriver, size 4	comm. avail.
Hand drill	comm. avail.

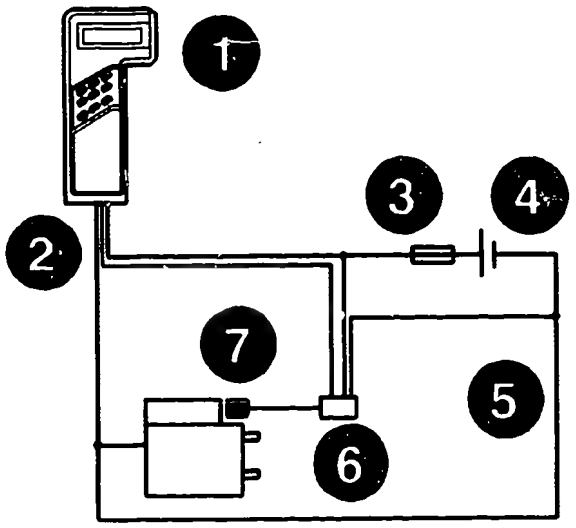
Continue: I01/1

ELECTRICAL TERMINAL DIAGRAM

1 = KTS 300
2 = Universal adapter
3 = Positive lead with fuse (8A)
4 = Battery or voltage stabilizer
(not charger)
5 = Ground wire
6 = DDS 1.1 system connector
Terminal 1 = 12 V
Terminal 2 = not used
Terminal 3 = signal
Terminal 4 = ground
7 = DDS1

Continue: I01/1 Fig.: I09/2

KMK07571



SELF-DIAGNOSIS

Preparation

Connect KTS 300 with loaded RAM module and universal test lead.

Connect stabilizer.

Use adapters from test cable set.

A l w a y s protect exposed areas of connecting leads against ground contact (e.g. piece of conduit).

Continue: I10/2

SELF-DIAGNOSIS

Preparation

Following establishment of communication and provided that both DDS1 and electric shut-off device (ELAB) are intact, ELAB clocking starts. Actuation frequency approx. 1 Hertz. ELAB is OK if switching noise is audible.
Fault memory of DDS1 must also be read to ensure that DDS1 is OK.

If switching noise is not heard, continue on Coordinate: I16/1

Continue: I11/1

SELF-DIAGNOSIS

Preparation

If communication is repeatedly interrupted during its establishment, check terminal assignment.

Renew DDS1 if terminal assignment is OK.

Continue: I11/2

Read fault memory.

If no fault has been stored, continue on Coordinate: I16/2

Fault code: 1	I13/1
Fault code: 2	I13/2
Fault code: 4	I14/1
Fault code: 8 (code not used)	-----

Continue: I12/1

Read fault memory.

Fault code: 10 I14/2

Fault code: 40 I15/1

Fault code: 80 I15/2

Continue: I01/1

Fault code 1

Renew DDS1.

Continue: I11/2

Fault code 2

Renew DDS1.

Continue: I11/2

Fault code 4

Renew DDS 1.1.

Continue: I11/2

Fault code 10

Interrupt voltage supply to DDS 1.1.

Re-connect voltage supply. Start diagnosis program.

If fault still present, renew DDS 1.1.

Continue: I12/1

Fault code 40

No fault in DDS 1.1!

Fault probably in system connection between keypad (immobilizer) and DDS 1.1.

Check system connection.

If OK, keypad (immobilizer) is defective.

Continue: I12/1

Fault code 80

No fault in DDS 1.1!

Fault probably in system connection between keypad (immobilizer) and DDS 1.1.
Check system connection. If OK, keypad (immobilizer) is defective.

Continue: I12/1

Disassemble DDS 1.1.

Check ELAB.

If ELAB is OK, renew DDS 1.1 and ELAB.

Renew ELAB if it is defective.

Continue: I12/1

DISASSEMBLING CAST HOUSING

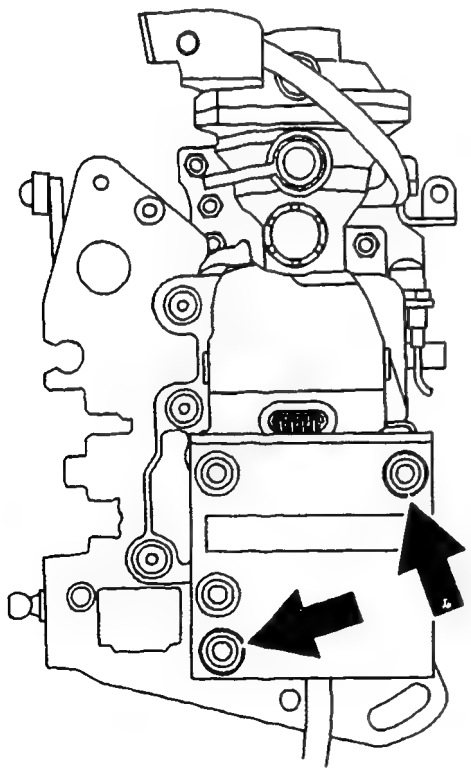
Disconnect voltage supply to DDS 1.1.

Attach clamping flange to pump flange.
Clamp fuel-injection pump with clamping flange in assembly stand.

Detach add-on components from support bracket.
Screw out the 2 distributor-head bolts crosswise, fit drilling template (Fig., arrows).
Carefully drill heads of shear bolts with 8 mm HSS drill (fracture areas) to create a drilling center.

Continue: I18/1 Fig.: I17/2

KMK09458



DISASSEMBLING CAST HOUSING

Then use 5 mm HSS drill to drill to a depth of approx. 6 mm in each bolt head (3).

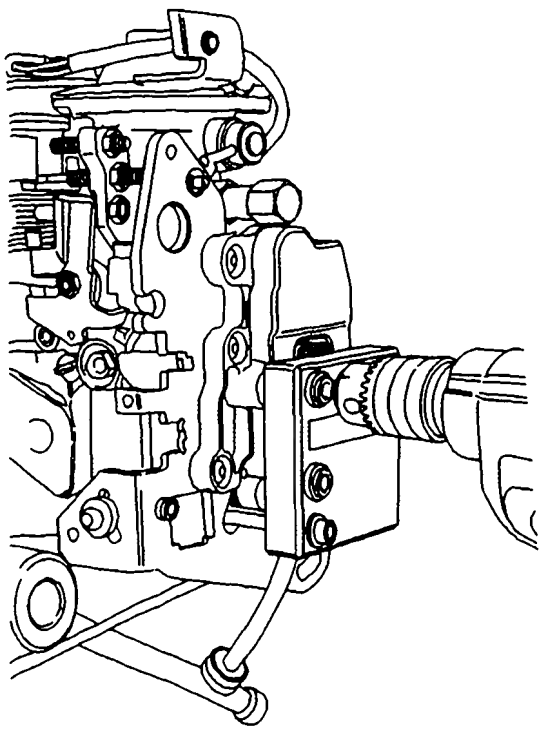
Remove chips before detaching drilling template.

Screw distributor-head bolts back in again and tighten to 10...14 Nm.

Carefully screw out shear bolts with appropriate tool.

Continue: I01/1 Fig.: I18/2

KMK08654



DISASSEMBLING DDS 1.1

Remove hexagon socket-head bolts (8).

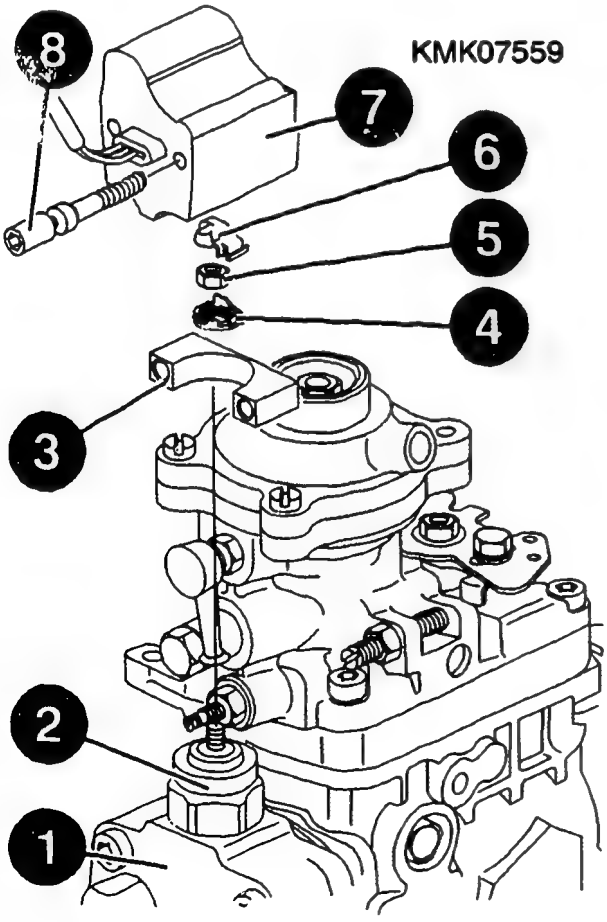
Carefully pull off DDS 1.1 (7).

Remove protective cap (6) from electrical connection of ELAB.

Unscrew collar nut (5) at ELAB (2) and pull off DDS 1.1 (7).

Remove locating piece (4) and bracket (3).

Continue: I01/1 Fig.: I19/2



ASSEMBLING DDS 1.1

I m p o r t a n t!

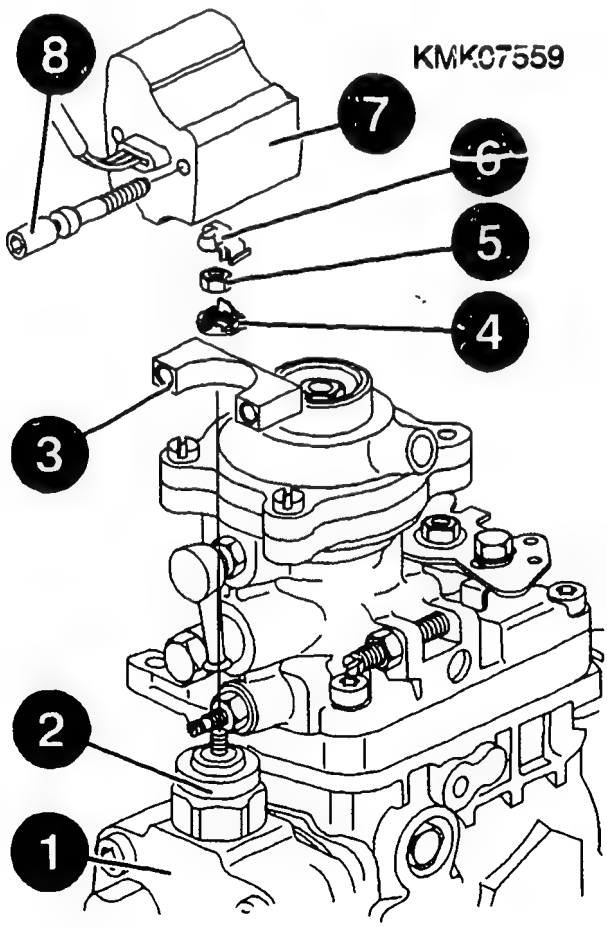
* A l w a y s use assembly kit for assembling DDS 1.1.
* DDS 1.1 may o n l y be operated with ELAB connecting cable fitted.
* N e v e r pull on ELAB connecting cable or DDS 1.1 with ELAB connecting cable screwed on.
* Threads of clip and bolts must be free from grease prior to use.
* Always renew ELAB and clip after disassembling or replacing DDS 1.1.

Continue: I21/1

ASSEMBLING DDS1

Place clip (3) behind ELAB (2). Attach locating piece (4) to ELAB (2).
Insert ELAB connecting cable in locating piece (4). Attach connecting cable with collar nut (5) to ELAB (2).
Tightening torque: 2 Nm
Attach ELAB protective cap (6).
Slip on DDS1.1 (7).
Insert hexagon socket-head bolts (8, not shear bolts) into holes in DDS1.1 housing.

Continue: I22/1 Fig.: I21/2



ASSEMBLING DDS1

Tightening specification

1. Screw in both bolts 4 turns by hand
2. Position right bolt by hand
3. Position left bolt by hand and use torque wrench to tighten to 1 Nm
4. Tighten right bolt to 2 Nm
5. Tighten left bolt to 5.5 Nm
6. Tighten right bolt to 5.5 Nm

Continue: I23/1

ASSEMBLING CAST HOUSING

Note:
If fuel-injection pump has been repaired (e.g. distributor head, pump cover), it may be necessary to enlarge the holes at the support bracket and cast housing (Fig., arrows).

Fit support bracket, insert all securing bolts and shear bolts and tighten by hand. If friction is felt when screwing in, enlarge the holes concerned by approx. 0.5 mm.

Continue: I24/1 Fig.: I23/2

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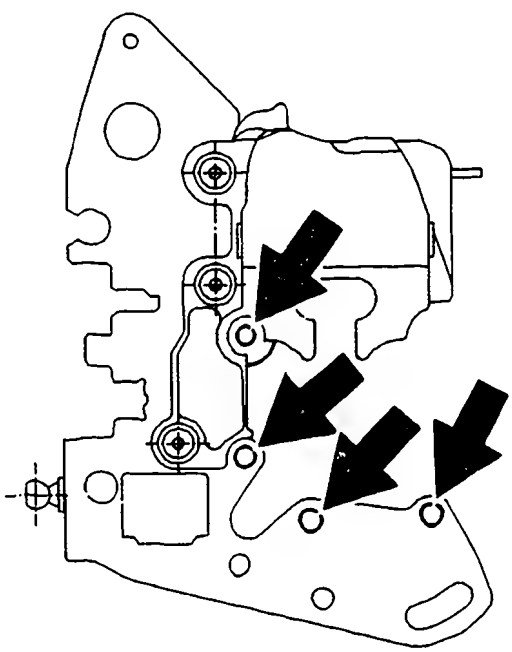

ASSEMBLING CAST HOUSING

Tighten distributor-head shear bolt (1) and shear off. Then tighten remaining bolts (2). Shear off shear bolts (3).

Completely assemble fuel-injection pump.

Tightening torques:

* Torx bolts	10...14 Nm
* Hexagon socket-head bolts	7...10 Nm

Continue: I01/1 Fig.: I24/2

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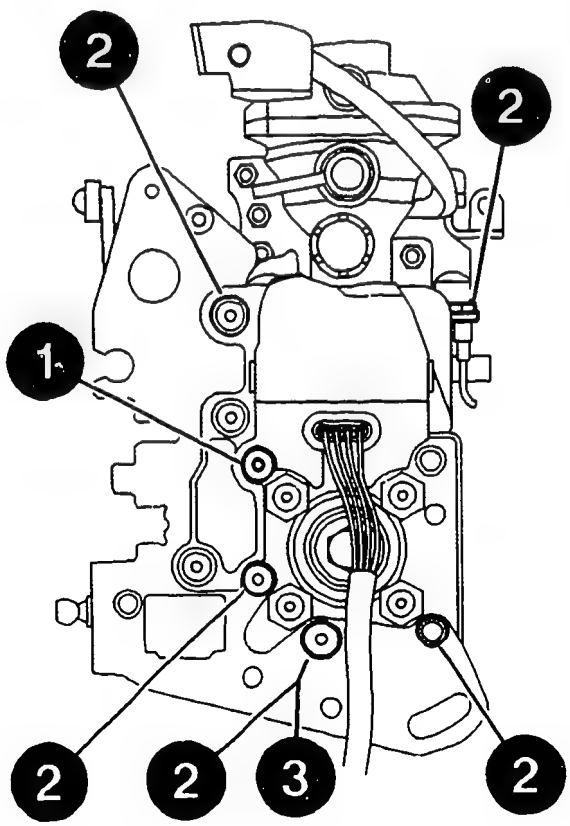

DRAWINGS

1 = Protective cap for cast housing
2 = Hexagon socket-head bolts (2)
3 = Hexagon socket-head bolts
4 = DDS 1.1
5 = Clip
6 = ELAB protective cap
7 = Locating piece
8 = Collar nut
9 = ELAB
10 = Fuel-injection pump

Continue: I26/1 Fig.: I25/2

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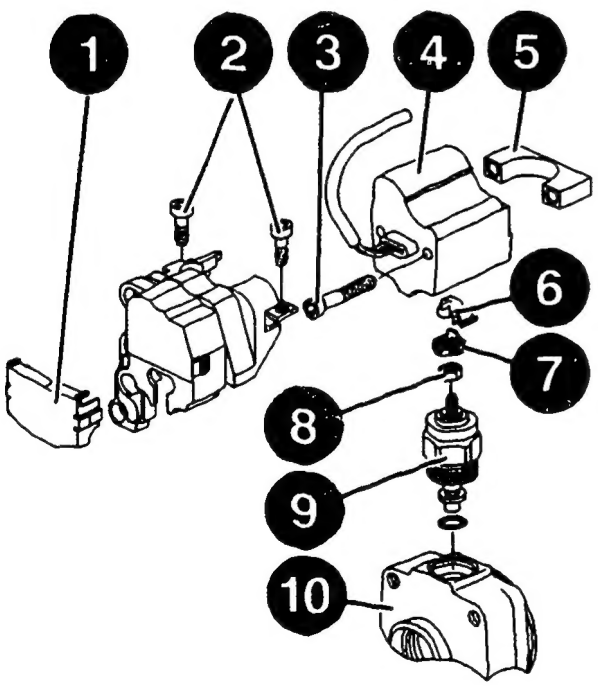

DRAWINGS

1 = Distributor-head shear bolt
2 = Support-bracket shear bolts
3 = Cast housing
4 = Support bracket

Continue: I01/1 Fig.: I26/2

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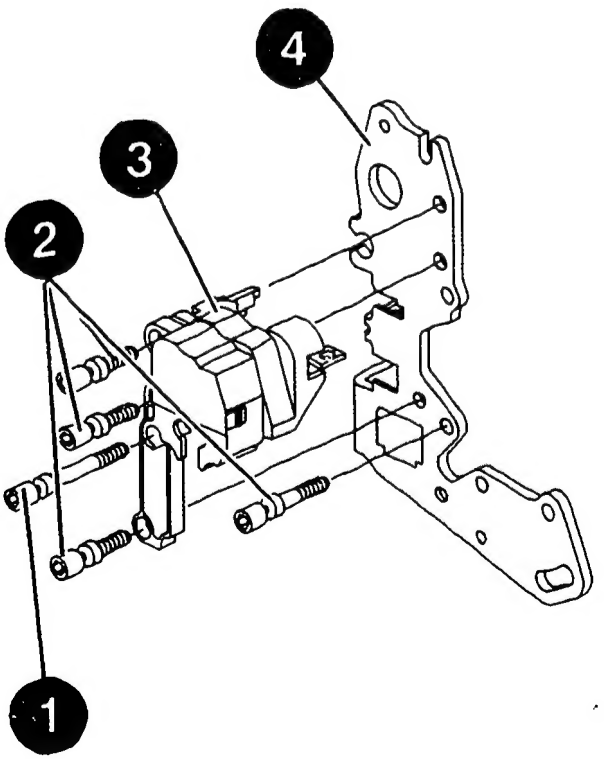

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EDITORIAL NOTE

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